Mini System

FW-C355/21/22/34

Service
Service
Service

Service Manual

COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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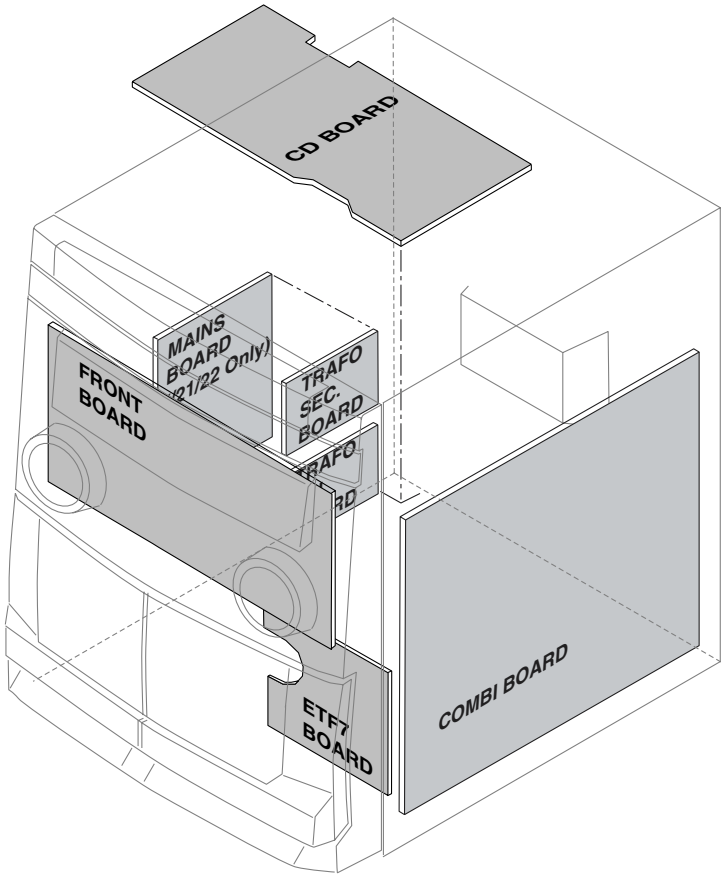
Version 1.0

PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	FW-C355							
	/21	/22	/33	/34				
Karaoke	x							
News		x		x				
RDS		x		x				
Incredible Surround								
Rotary Encoder (volume control)	x	x	x	x				
Jog Shuttle	x	x	x	x				
Voltage Selector	x							
Aux / CDR Input	x	x	x	x				
Digital Output								
Headphone Socket	x	x	x	x				
Line Output								
Subwoofer Output								
Surround Output								
Matrix Surround Loudspeakers								
Standby - FTD Clock Display	x	x	x	x				
ECO Standby - Dark		x						
Combi - Non-Cenelec Tuner	x		x	x				
Combi - Cenelec Tuner		x						
Mains Board (Chapter 8)	x	x						

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21
220-230V for /22/34
Mains frequency : 50/60Hz
Power consumption : < 70W Active
< 15W at Standby with Clock on
< 0.5W at ECO Standby /22
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 365mm

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz
100kHz for /21
IF frequency : 10.7MHz ± 20kHz
Aerial input : 75Ω coaxial
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 25dB
IF rejection : > 60dB [80dB]
Image rejection : > 25dB [75dB]
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
530-1700kHz for /21
Grid : 9kHz
10kHz for /21
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.4mV/M [4.0mV/M]
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power : 2 x 40W [1] RMS
Frequency response within -3dB : 50Hz-15kHz
Dynamic Bass Boost : DBB ON, DBB 1, DBB 2, DBB 3 [3]
Digital Sound Control : Jazz, Techno, Optimal, Rock [3]
Headphone output, R_{LOAD} = 32Ω : 15mW ± 2dB
Input sensitivity, R_S = 600Ω
Aux / CDR : 500mV / 1.0V
Mic : {3.5mV}

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec +2.5/-1.5%
Wow and flutter : < 0.4% DIN
Fast-wind/rewind time C60 : 130 sec
Bias system : 78kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to noise ratio Type I : > 48dBA

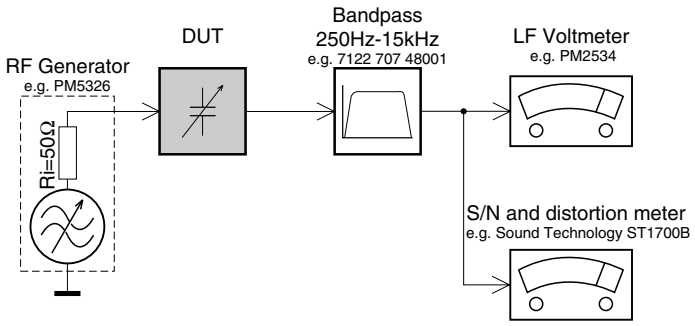
COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 500mV ± 1dB, R_{out} = 100Ω
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.003%
Channel unbalance at 1kHz : ±1dB
Channel separation at 1kHz : > 60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

{....} Values for /21/21M only
[....] Values for Cenelec Tuner only
1) 6Ω, 1kHz, 10% THD
2) Frequency response in each setting is software controlled.

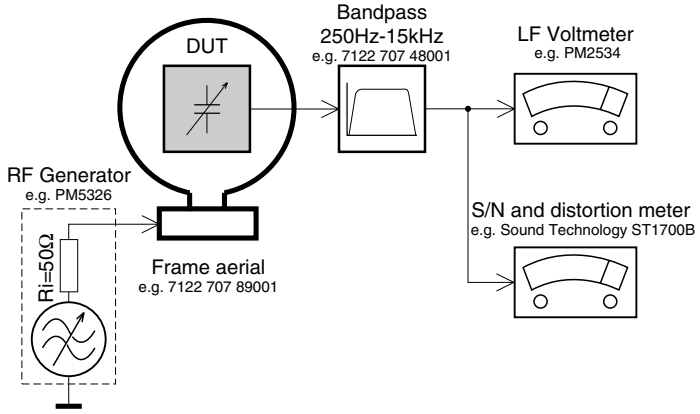
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

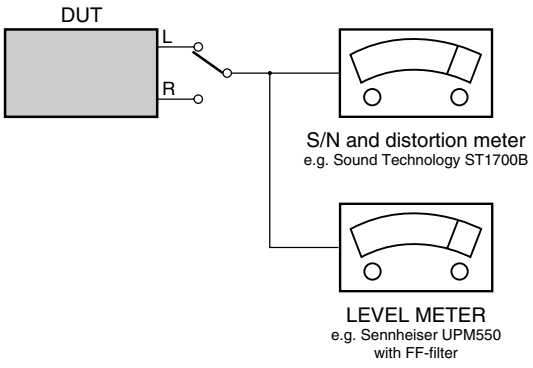
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

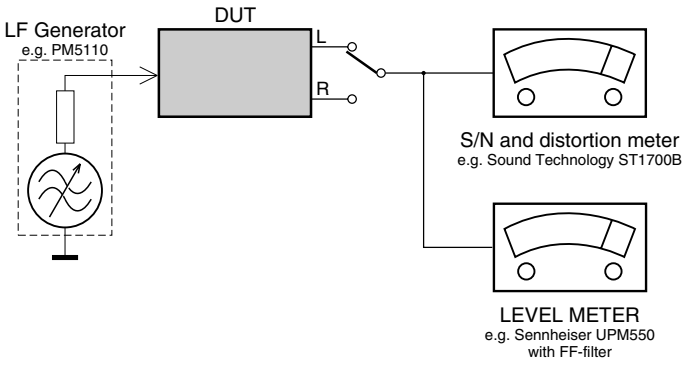
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6 - T20 ..... 4822 395 50145
Torx driver T10 extended 4822 395 50423

Cassette:

SBC419 Test cassette CrO2 ..... 4822 397 30069
SBC420 Test cassette Fe 4822 397 30071
MTT150 Dolby level 200nWb/M 4822 397 30271

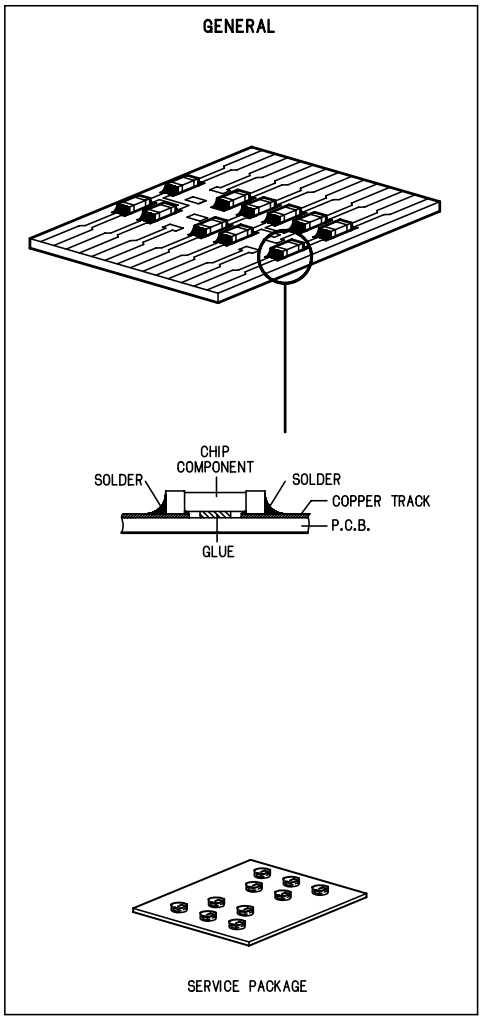
Compact Disc:

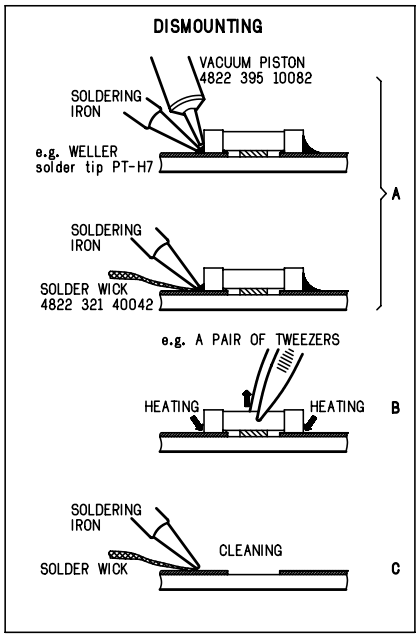
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

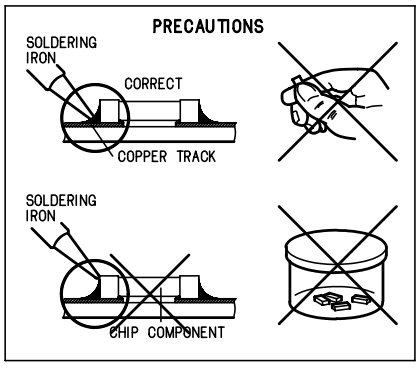
ESD Equipment:

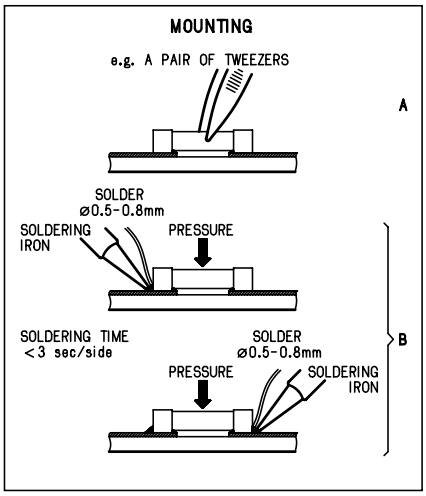
Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat to conn. box) 4822 320 11306
Earth cable (to connect product to mat or box) 4822 320 11308
Complete kit ESD3
(combining all above products) 4822 320 10671
Wristband tester 4822 344 13999

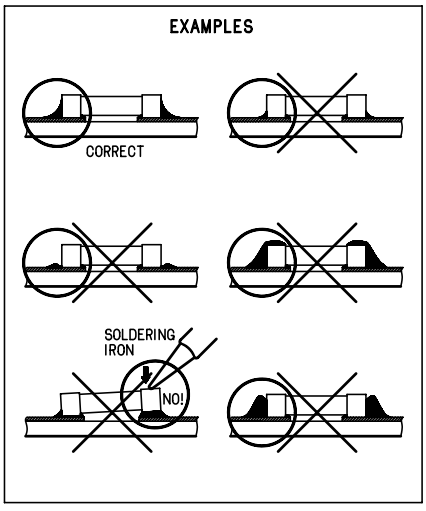
HANDLING CHIP COMPONENTS











ESD

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

DISMANTLING INSTRUCTIONS

Dismantling the 3CDC Module

1) Loosen the 4 screws, slide Cover top (pos 255) towards the rear and remove it upwards.
2) Loosen 3 screws slide the Panel right (pos 254) towards the rear and remove it outwards. Do likewise for the Panel left (pos 253).
3) Push the gear slowly towards the front as shown in figure 2 until the CDC tray starts to move out of the Front Cabinet (pos 101). The CDC tray is now disengage and can be pulled out completely.
4) Remove the Cover Tray (pos 106) as shown in figure 1.
5) Loosen 4 screws A to remove the CDC Module (pos 1104) as shown in figure 2.

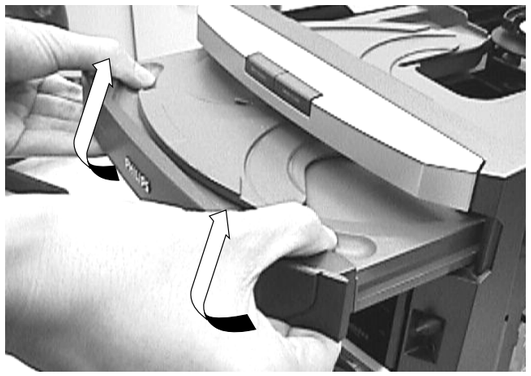


Figure 1

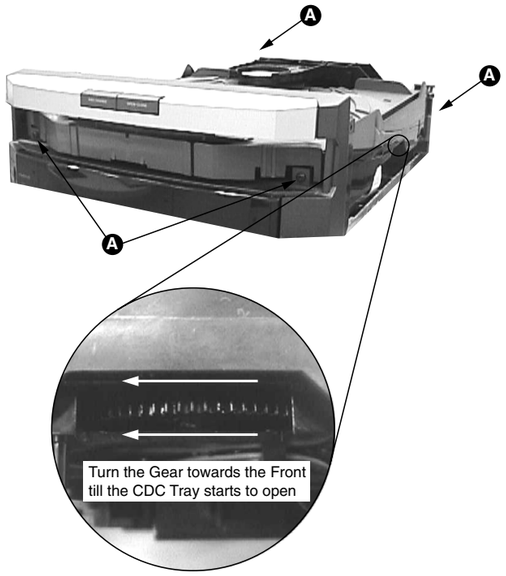


Figure 2

Dismantling of the Volume & Jog Rotary knobs

1) Cut a piece of packaging tape approximately 5cm width by 12cm length and tape its narrow side on to the top and bottom side of the Volume knob (pos 139) as shown in figure 3.
2) Place a small screw driver in between the tape & knob (see figure 3) to give more leverage in pulling out the knob as shown in figure 4.
3) Do likewise for the Jog Rotary knob (pos 138). You may have to rotate the knob to provide the most exposed area during application of the packaging tape.

Figure 3

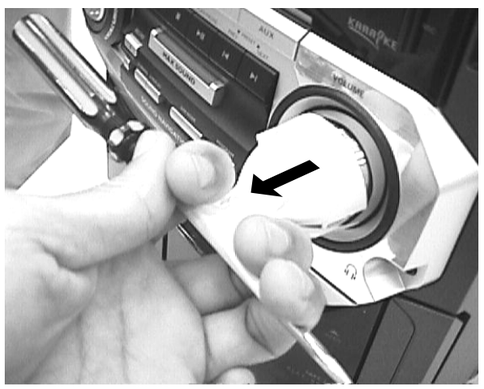


Figure 4

Dismantling of the Front Panel assembly

1) Loosen 2 screws below the Front Panel (pos 101) mounting it to the Bottom plate (pos 265).
2) Release the 2 catches on the sides of the Front Panel to separate it from the Bottom plate.
3) Remove the Volume and Jog Rotary knob if the Front board needs to be dismantled. For Karaoke versions, the Karaoke knob (pos 133) also need to be removed.
4) Loosen 8 screws B to remove the Front board as shown in Figure 5.
5) Loosen 6 screws C and eject both cassette doors to remove the Tape mechanism (pos 1103) as shown in figure 6.

Note: The Cassette door can be removed only after the removal of the Tape mechanism and buttons.

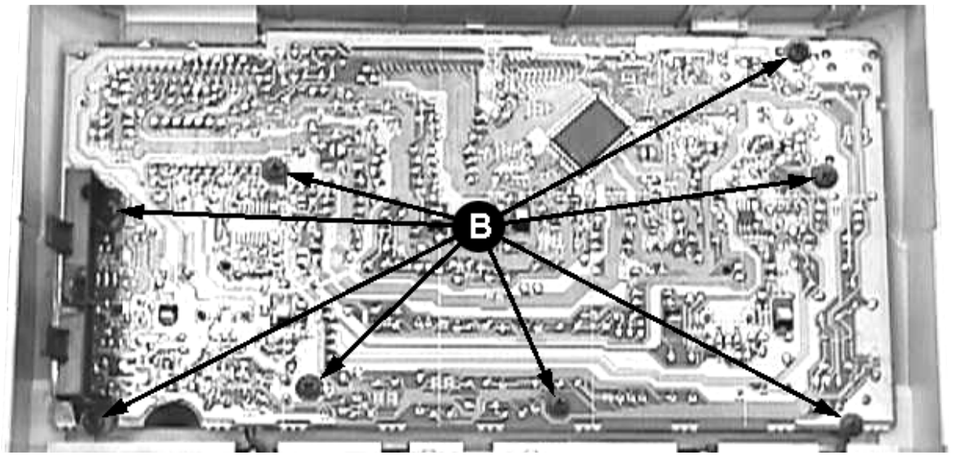


Figure 5

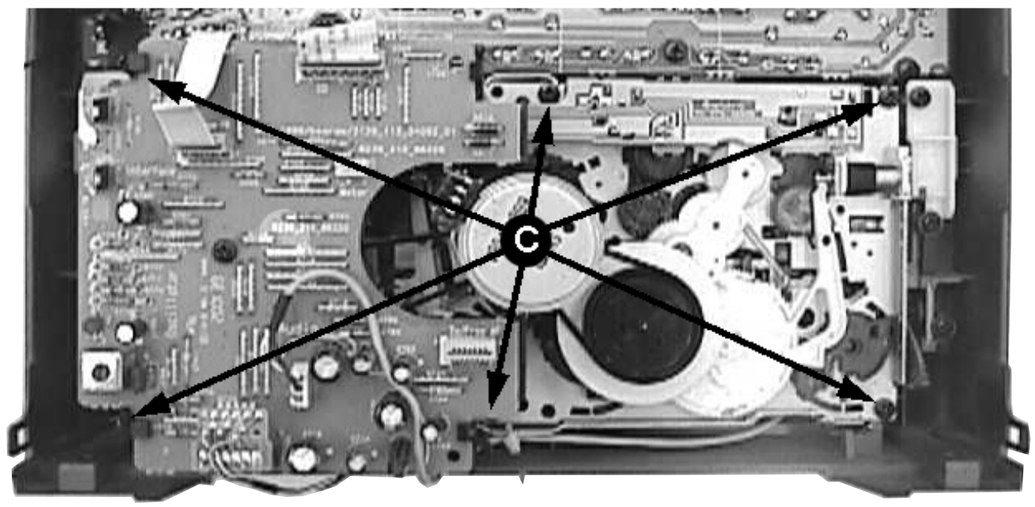


Figure 6

Dismantling of the Bottom & Rear Panel assembly

1) Loosen 5 screws D mounting the Combi board to the Rear Panel (pos 256) as shown in figure 7.
2) Loosen 3 screws E and release the 2 catches on the sides of the Rear Panel to separate it from the Bottom plate (pos 265).
3) Loosen 4 screws G to remove the Mains Transformer as shown in figure 8.
4) Loosen 2 screws F to remove the Combi Board.

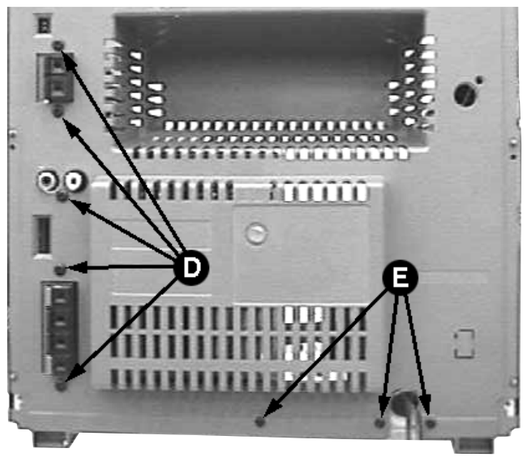


Figure 7

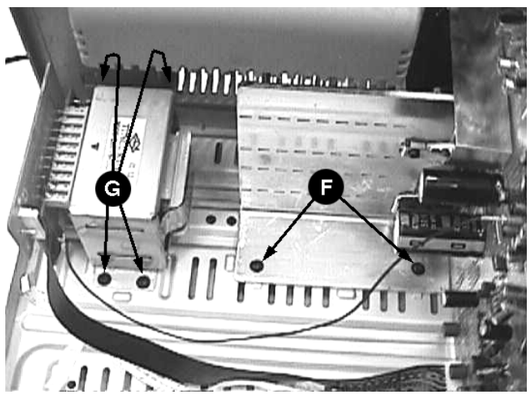
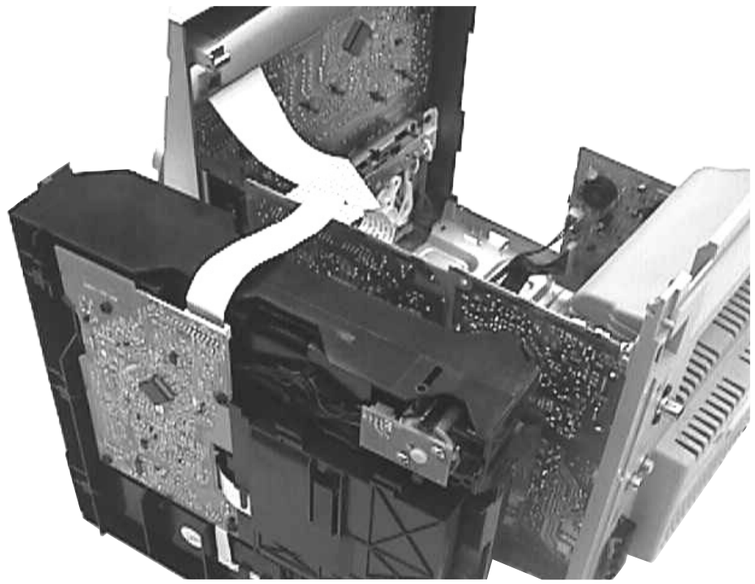
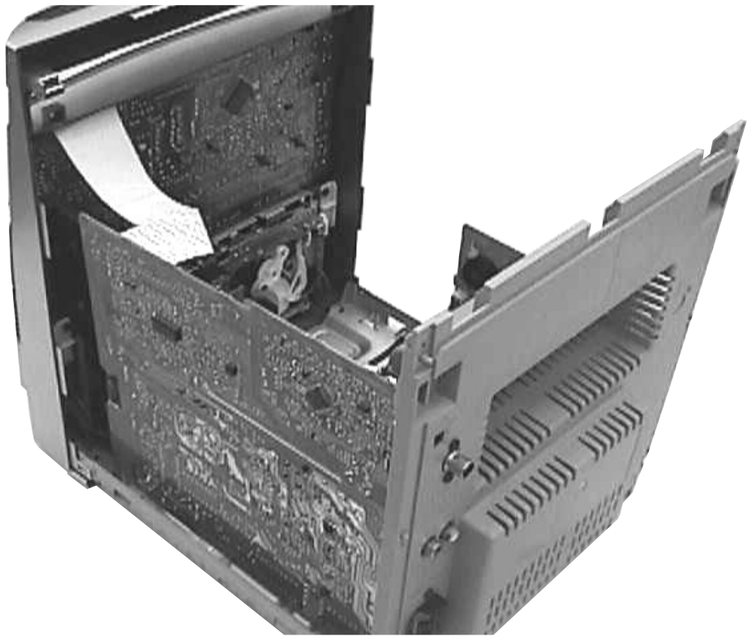


Figure 8

Service pos A

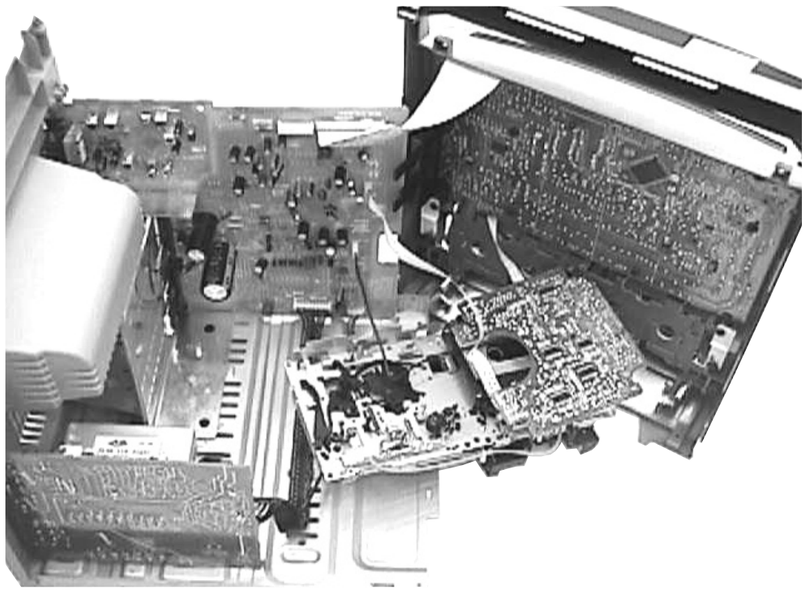


Service pos B



2-2

Service pos C

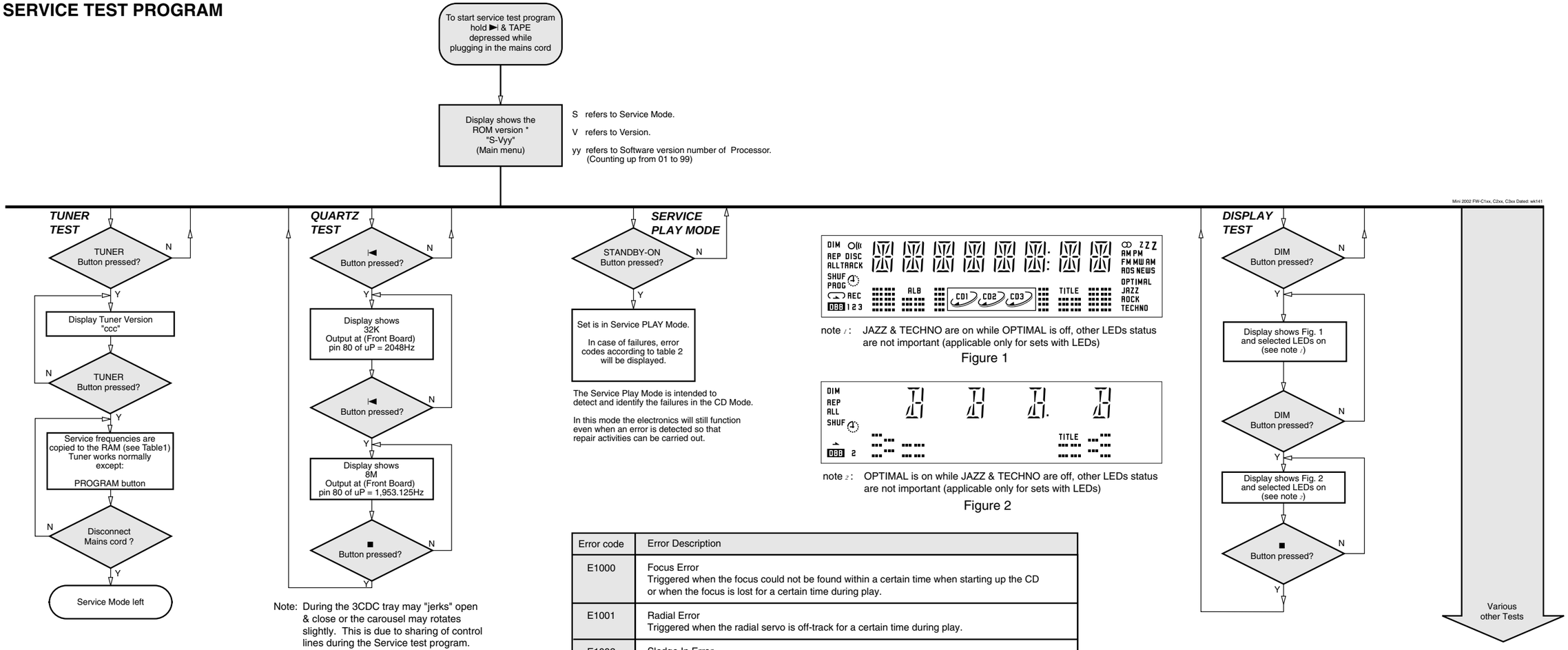


Note: After re-assembly, it is very important to ensure all wires are routed properly to ensure that they do not touch/obstruct all moving parts.

The 3CDC Module can be complete detached while repairing the other portion of the set.

3-1

SERVICE TEST PROGRAM


To start service test program hold ►| & TAPE depressed while plugging in the mains cord
Display shows the ROM version * "S-Vyy" (Main menu)
S refers to Service Mode.
V refers to Version.
yy refers to Software version number of Processor. (Counting up from 01 to 99)
Mini 2002 FW-C1xx, C2xx, C3xx Dated: wk141
TUNER TEST
TUNER Button pressed?
Display Tuner Version "ccc"
TUNER Button pressed?
Service frequencies are copied to the RAM (see Table1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
Button pressed?
Display shows 32K Output at (Front Board) pin 80 of uP = 2048Hz
Button pressed?
Display shows 8M Output at (Front Board) pin 80 of uP = 1,953.125Hz
■ Button pressed?
SERVICE PLAY MODE
STANDBY-ON Button pressed?
Set is in Service PLAY Mode.
In case of failures, error codes according to table 2 will be displayed.
DISPLAY TEST
DIM Button pressed?
Display shows Fig. 1 and selected LEDs on (see note 1)
DIM Button pressed?
Display shows Fig. 2 and selected LEDs on (see note 2)
■ Button pressed?
Various other Tests

Note: During the 3CDC tray may "jerks" open & close or the carousel may rotates slightly. This is due to sharing of control lines during the Service test program.

PRESET	Europe "EUR"	East Eur. Extended-band "EAS"	East Eur. "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	531kHz	530kHz	530/531kHz*
4	1602kHz	87.5MHz	1602kHz	1700kHz	1700/1602kHz*
5	558kHz	531kHz	558kHz	560kHz	560/558kHz*
6	1494kHz	1602kHz	1494kHz	1500kHz	1500/1494kHz*
7	87.5MHz	558kHz	87.5MHz	98MHz	98/87.5MHz*
8	87.5MHz	1494kHz	87.5MHz	87.5MHz	87.5MHz
9	87.5MHz	98MHz	87.5MHz	87.5MHz	87.5MHz
10	87.5MHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz
11	98MHz	65.81MHz	98MHz	87.5MHz	87.5/98MHz*

Table 1

Note: * Depending on the selected grid frequency (9 or 10kHz)
By holding the TUNER and ►► buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.
- the extended FM1 (65.81MHz - 74MHz) is toggled on and off for East Eur. (/34) version.

The Service Play Mode is intended to detect and identify the failures in the CD Mode.

In this mode the electronics will still function even when an error is detected so that repair activities can be carried out.

note 1: JAZZ & TECHNO are on while OPTIMAL is off, other LEDs status are not important (applicable only for sets with LEDs)

Figure 1

note 2: OPTIMAL is on while JAZZ & TECHNO are off, other LEDs status are not important (applicable only for sets with LEDs)

Figure 2

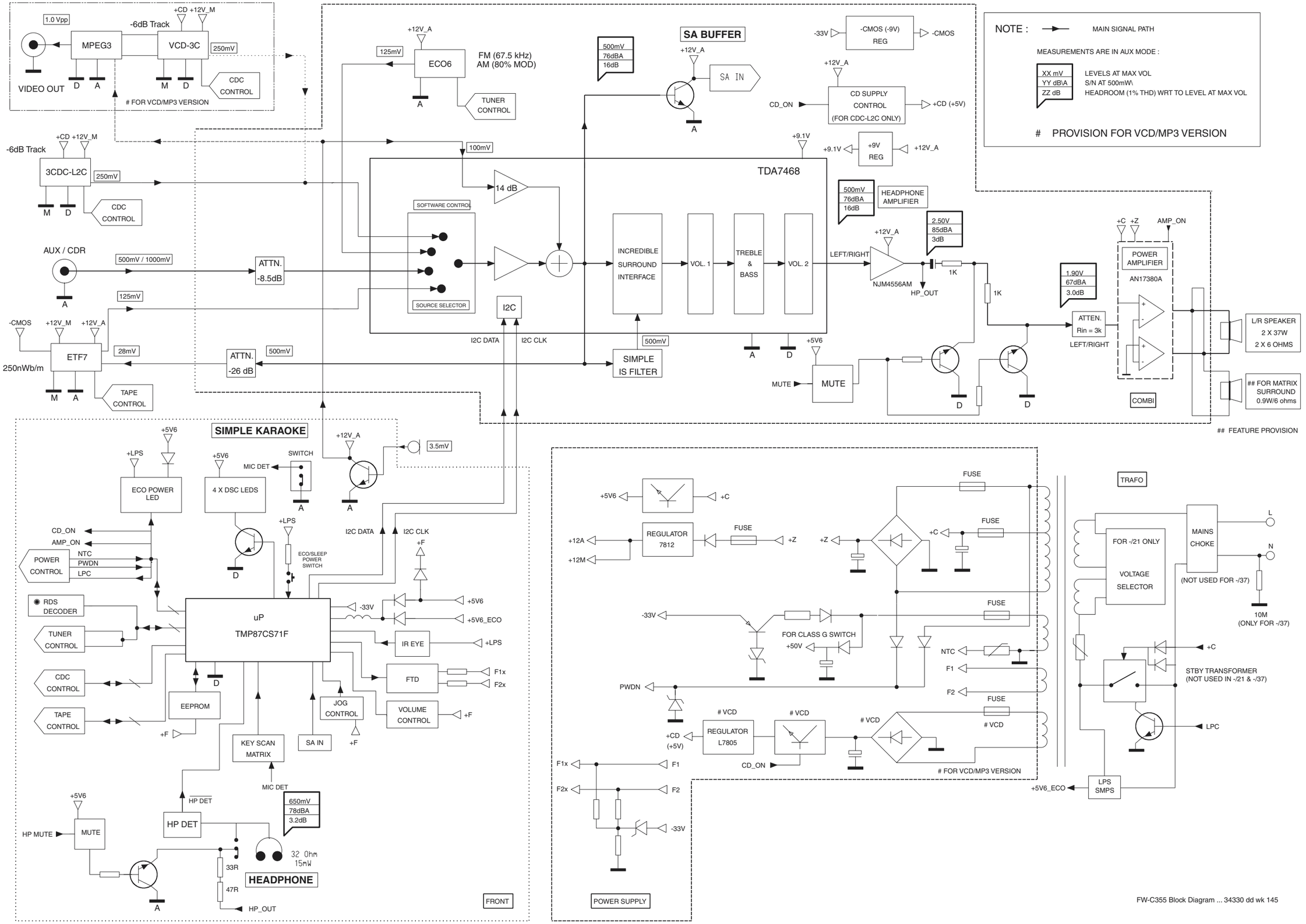
Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time. When this error occurred, software will try to recover by initiating the jump command again. If it is recoverable, the disc will continue to play.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1070	This happens when the carousel switch is defective and closed all the time, or when the carousel is blocked when it is located exactly at a disc position.
E1071	This happens when the carousel switch is defective and does not closed electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	The drawer could not open or enter the inside position and is opening again. This happen when the drawer is blocked and cannot go fully inside or when the drawer switch is defective and does not close.

Table 2

TEST	***Activated with***	***ACTION***
EEPROM TEST	►► ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
ROTARY ENCODER TEST	Volume Knob or Jog Shuttle knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
DEMO	DBB	DEMO will toggle on or off. The message: "DEMO ON" or "DEMO OFF" will scroll across the display to show the new status of the set.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

4-1

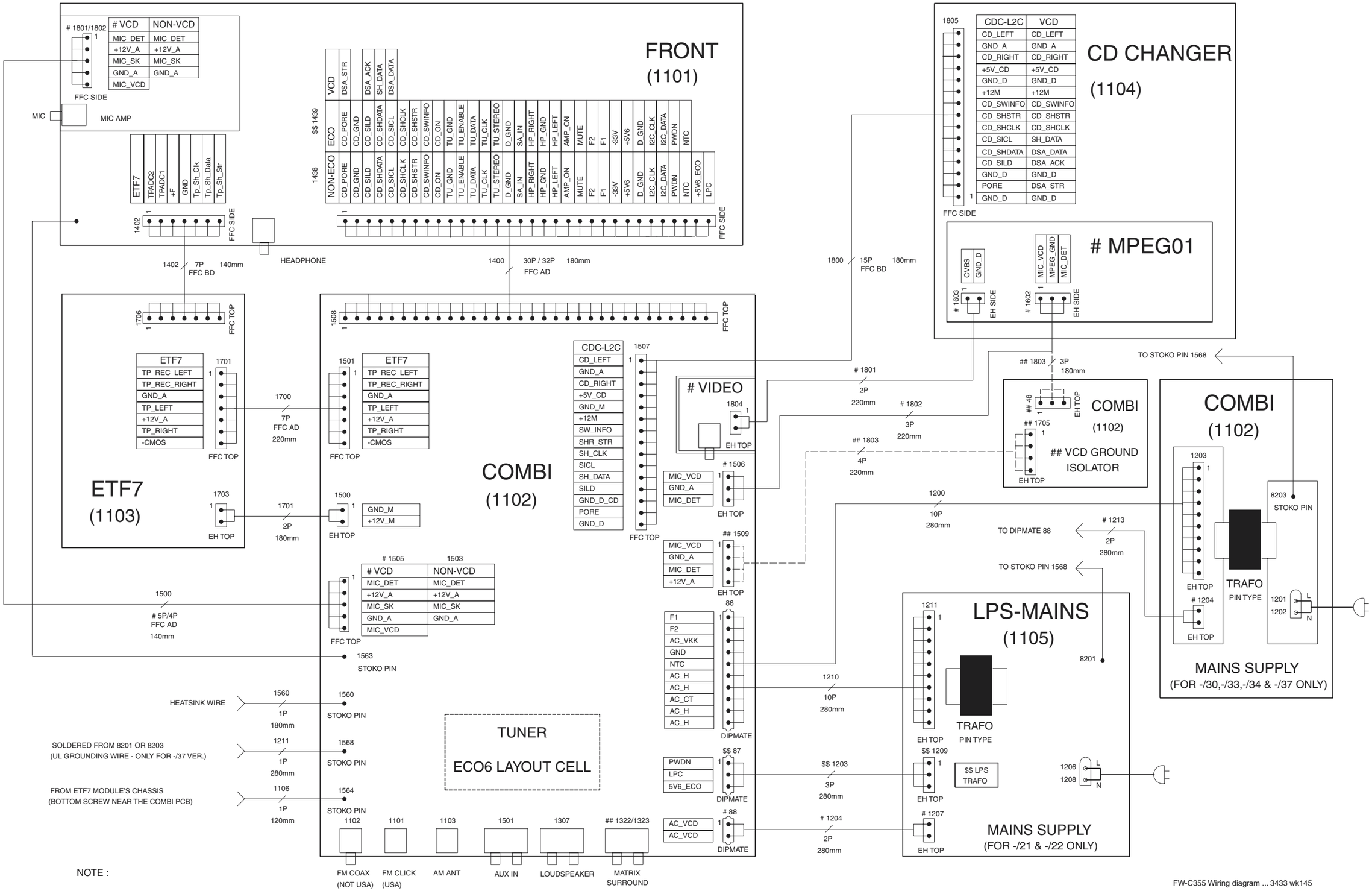
SET BLOCK DIAGRAM



FW-C355 Block Diagram ... 34330 dd wk 145

5-1

SET WIRING DIAGRAM



NOTE :

- PROVISION FOR SETS WITH VCD/MP3 FEATURE .
- PROVISION FOR SETS WITH MATRIX SURROUND & VCD GROUND ISOLATOR .
$$ - PROVISION FOR SETS WITH ECO FEATURE (ONLY FOR -/22 VER.) .

FRONT BOARD

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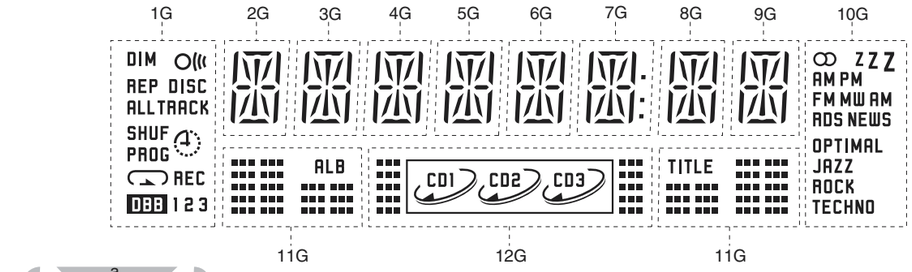
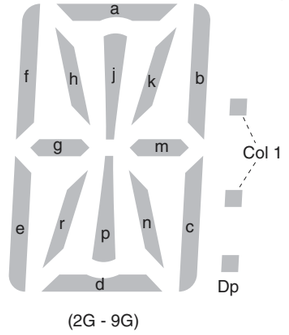
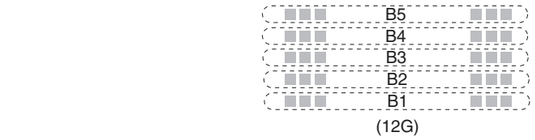
FTD DISPLAY PIN CONNECTIONS

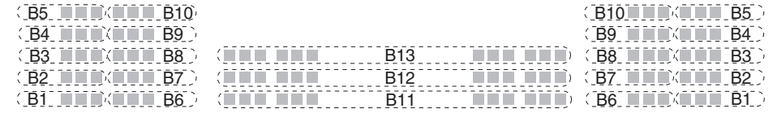




(2G - 9G)



(12G)



(11G)

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	B1	B1	∞	a	a	a	a	a	a	a	a	DIM
P2	B2	B2	Z *(Left)*	h	h	h	h	h	h	h	h	○((
P3	B3	B3	Z *(Middle)*	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	REP
P4	B4	B4	Z *(Right)*	k	k	k	k	k	k	k	k	DISC
P5	B5	B5	AM *(Up)*	b	b	b	b	b	b	b	b	ALL
P6	CD1	B6	PM	f	f	f	f	f	f	f	f	TRACK
P7	CD2	B7	FM	m	m	m	m	m	m	m	m	SHUF
P8	CD3	B8	MW	g	g	g	g	g	g	g	g	PROG
P9	*(1)*	B9	AM *(Low)*	c	c	c	c	c	c	c	c	◷
P10	*(2)*	B10	RDS	e	e	e	e	e	e	e	e	▭
P11	*(3)*	B11	NEWS	r	r	r	r	r	r	r	r	▬
P12		B12	OPTIMAL	n	n	n	n	n	n	n	n	REC
P13	-	B13	JAZZ	d	d	d	d	d	d	d	d	DBB
P14	-	ALB	ROCK	-	-	Col	-	-	-	-	-	1
P15	-	TITLE	TECHNO	-	-	Dp	-	-	-	-	-	2
P16	-	-	-	-	-	-	-	-	-	-	-	3

FTD DISPLAY PIN NO.	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
FUNCTION	F2	-	-	-	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	-	-	-	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	-	-	-	F1

Front Board application

A55470	FW-C355/21/33
A55480	FW-C355/22
A55490	FW-V355/21M
A55500	FW-C355/34
A55520	FW-M355/22
A55530	FW-M355/34
A55540	FW-M355/37

FEATURES:	A55470	A55480	A55490	A55500	A55520	A55530	A55540			
Karaoke / Mic Detect	x	-	x	-	-	-	-			
VCD	-	-	x	-	-	-	-			
RDS	-	x	-	x	x	x	-			
ECO Power LED	-	x	-	-	x	-	-			

6-2

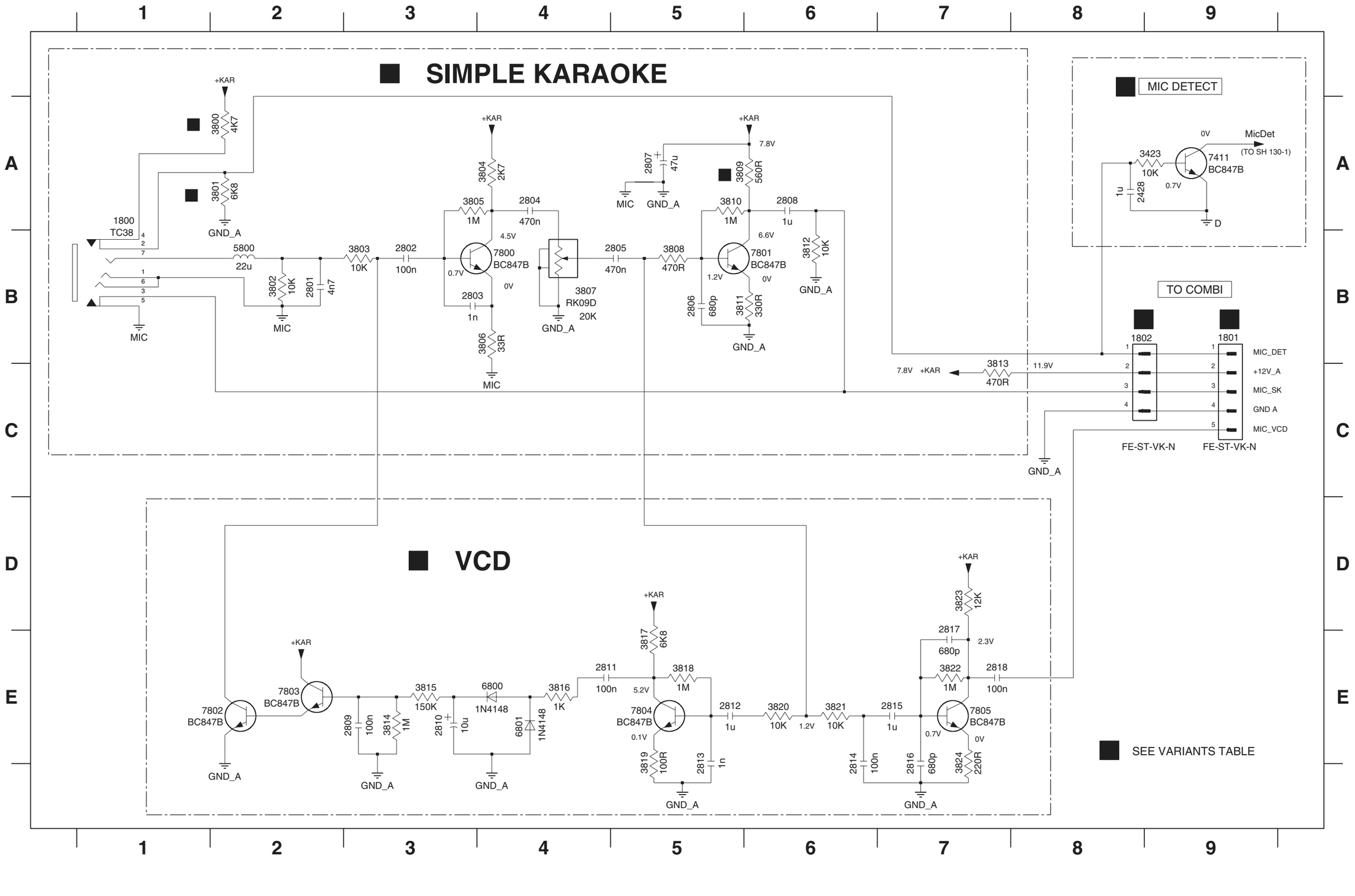
ITEM NO.	A55470	A55480	A55490	A55500	A55520	A55530	A55540	Functions
1427	-	x	x	x	x	x	-	REC
1428	REC	AUTO	AUTO	AUTO	AUTO	AUTO	REC	
1432	AUTO	RDS	PBC	RDS	RDS	RDS	AUTO	
1433	-	NEWS	RETURN	NEWS	NEWS	NEWS	-	
1438	-	x	-	-	x	-	-	with LPC
1439	x	-	x	x	-	x	x	without LPC
1801	-	-	x	-	-	-	-	VCD & KARAOKE
1802	x	-	-	-	-	-	-	KARAOKE
3529	-	330R	330R	330R	330R	330R	-	P01
3546	10k	-	10k	-	-	-	10k	RDSCLK
3548	10k	-	10k	-	-	-	10k	RDSDAT
3549	10k	-	10k	10k	-	10k	10k	RESET
3565	4R7	2R2	4R7	2R2	2R2	2R2	2R2	FTD Filament
3566	-	2R2	-	2R2	2R2	2R2	2R2	FTD Filament
3567	4R7	2R2	4R7	2R2	2R2	2R2	2R2	FTD Filament
3568	-	2R2	-	2R2	2R2	2R2	2R2	FTD Filament
3569	10k	-	10k	10k	-	10k	10k	LPC
3570	-	100k	-	-	100k	-	-	RESET
3800	4k7	-	1k	-	-	-	-	KARAOKE
3801	6k8	-	1k2	-	-	-	-	KARAOKE
3809	560R	-	680R	-	-	-	-	KARAOKE
4408	x	x	-	x	-	-	-	CDSICL
4409	x	-	x	x	-	x	x	+5V6
4410	-	-	x	-	x	x	x	SH_DATA
4411	-	x	-	x	x	x	x	HP_GND
4414	x	-	x	x	-	x	x	DLPC
4416	x	-	-	-	-	x	x	# AUTO
4417	-	x	x	x	x	x	-	AUTO
4419	x	-	x	x	-	x	x	RESET
4459	-	x	-	-	x	-	-	+5V6_ECO
4490	x	-	x	x	-	x	x	+5V6
4491	x	-	-	-	-	-	x	# REC
6401	-	x	-	-	x	-	-	+5V6_ECO
6417	-	x	x	x	x	-	-	P01
6429	x	-	x	-	-	-	-	KARAOKE
6430	-	x	-	-	x	-	-	ECO Power
9401	x	-	x	-	-	-	-	FTD Filament
9402	x	-	x	-	-	-	-	FTD Filament
9410	-	-	x	-	x	x	x	DSA_DATA
9411	-	x	-	-	x	-	-	+LPS
9416	x	x	-	x	-	-	-	CDSHDATA
9488	-	x	-	-	x	-	-	LPC
9506	-	x	-	-	x	-	-	+5V6_ECO
9514	-	x	-	-	x	-	-	+5V6_ECO

x = Item in use.

6-3

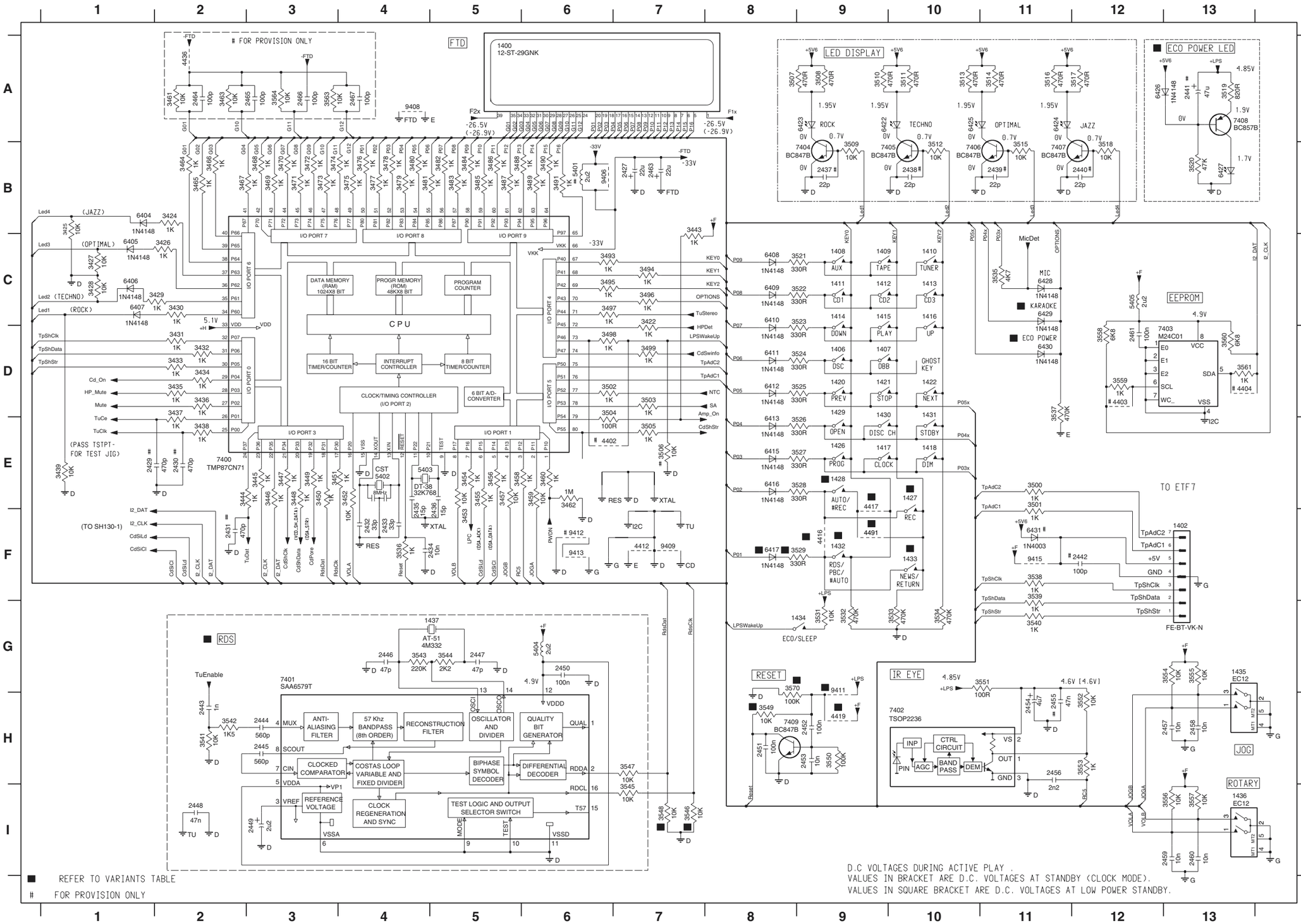
CIRCUIT DIAGRAM - KARAOKE PART

1800 A1	2428 A8	2803 B3	2806 B5	2809 E3	2812 E5	2815 E7	2818 E7	3801 A2	3804 A4	3807 B4	3810 A5	3813 C7	3816 E4	3819 E5	3822 E7	5800 B2	7411 A9	7802 E2	7805 E7
1801 B9	2801 B2	2804 A4	2807 A5	2810 E3	2813 E5	2816 E7	3423 A9	3802 B2	3805 A3	3808 B5	3811 B5	3814 E3	3817 E5	3820 E6	3823 D7	6800 E4	7800 B4	7803 E2	
1802 B8	2802 B3	2805 B5	2808 A6	2811 E4	2814 E6	2817 E7	3800 A2	3803 B3	3806 B4	3809 A5	3812 B6	3815 E3	3818 E5	3821 E6	3824 E7	6801 E4	7801 B6	7804 E5	



6-4

CIRCUIT DIAGRAM - MICROPROCESSOR PART

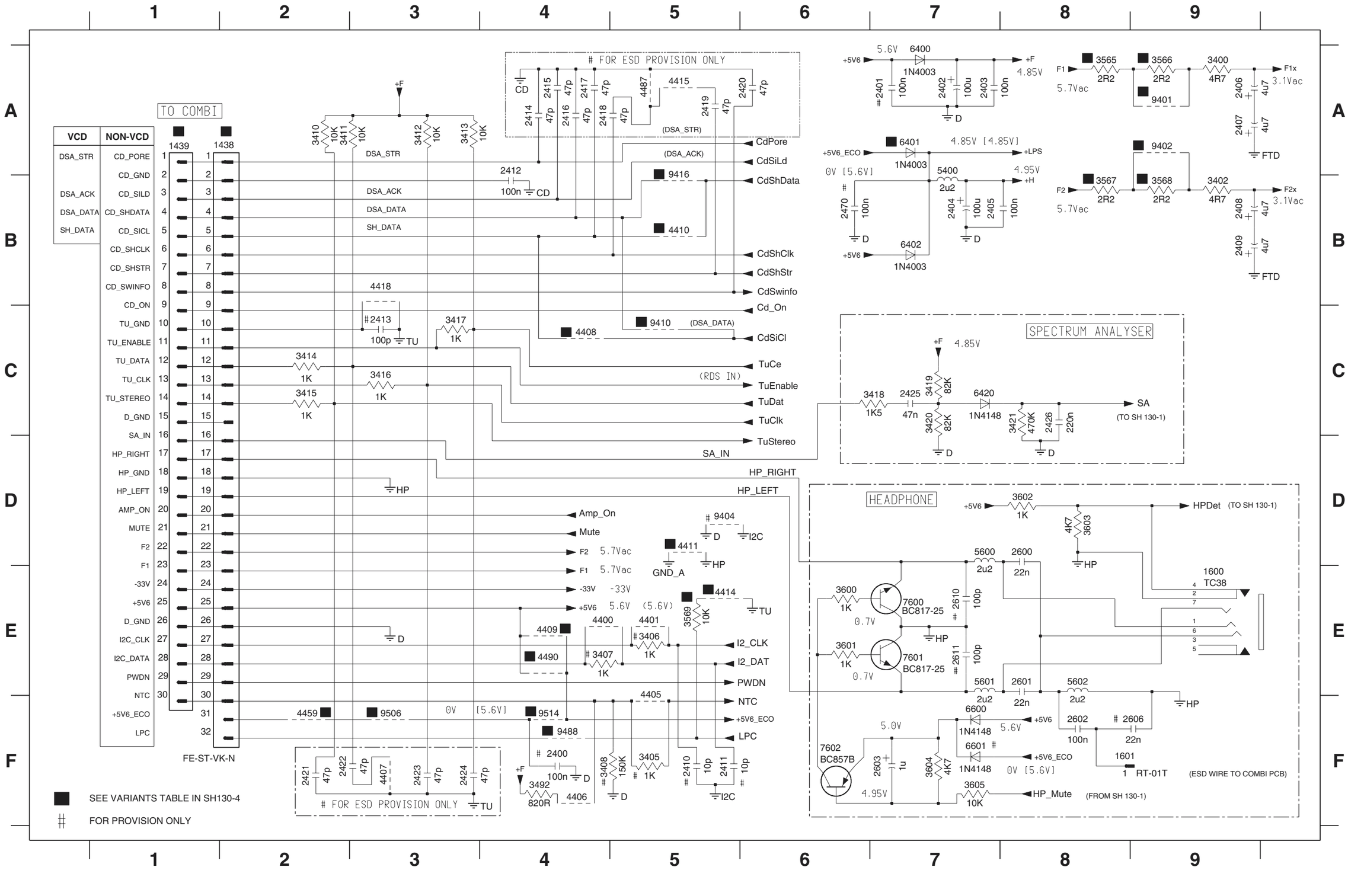


1400 A5	3471 B3	6412 D8
1402 F13	3472 B3	6413 E8
1406 D9	3473 B3	6415 E8
1407 D9	3474 B3	6416 E8
1408 C9	3475 B4	6417 F8
1409 C9	3476 B4	6422 A9
1410 C10	3477 B4	6423 A9
1411 C9	3478 B4	6424 A11
1412 C9	3479 B4	6425 A10
1413 C10	3480 B4	6426 A12
1414 C9	3481 B4	6427 B13
1415 C9	3482 B5	6428 C11
1416 C10	3483 B5	6429 C11
1417 E9	3484 B5	6430 D11
1418 E10	3485 B5	6431 F11
1420 D9	3486 B5	7402 H10
1421 D9	3487 B5	7403 D12
1422 D10	3488 B5	7404 B9
1426 E9	3489 B6	7405 B10
1427 E10	3490 B6	7406 B11
1428 E9	3491 B6	7407 B11
1429 D9	3493 C6	7408 A13
1430 E9	3494 C7	7409 H9
1431 E10	3495 C6	9406 B6
1432 F9	3496 C7	9408 A4
1433 F10	3497 C6	9409 F7
1434 G9	3498 D6	9411 H9
1435 G13	3499 D7	9412 F6
1436 I13	3500 E11	9413 F6
1437 G5	3501 E11	9415 F11
2427 B7	3502 D6	
2429 E1	3503 D7	
2430 E2	3504 D6	
2431 F2	3505 E7	
2432 F4	3506 E7	
2433 F4	3507 A8	
2434 F4	3508 A9	
2435 F4	3509 B9	
2436 F5	3510 A9	
2437 B9	3511 A10	
2438 B10	3512 B10	
2439 B11	3513 A10	
2440 B12	3514 A11	
2441 A13	3515 B11	
2442 F12	3516 A11	
2443 H2	3517 A12	
2444 H3	3518 B12	
2445 H3	3519 A13	
2446 G4	3520 B13	
2447 G5	3521 C9	
2448 I2	3522 C9	
2449 I3	3523 C9	
2450 G6	3524 D9	
2451 H8	3525 D9	
2452 H9	3526 E9	
2453 H9	3527 E9	
2454 H11	3528 E9	
2455 H11	3529 F9	
2456 H11	3531 G9	
2457 H13	3532 G9	
2458 H13	3533 G10	
2459 I13	3534 G10	
2460 I13	3535 C11	
2461 D12	3536 F4	
2463 B7	3537 D11	
2464 A2	3538 F11	
2465 A3	3539 F11	
2466 A3	3540 G11	
2467 A4	3541 H2	
3422 C7	3542 H2	
3424 B2	3543 G4	
3425 B1	3544 G5	
3426 C2	3545 I7	
3427 C1	3546 I7	
3428 C1	3547 H7	
3429 C2	3548 I7	
3430 C2	3549 H8	
3431 D2	3550 H9	
3432 D2	3551 G11	
3433 D2	3552 H12	
3434 D2	3553 H12	
3435 D2	3554 G13	
3436 D2	3555 G13	
3437 D2	3556 I13	
3438 E2	3557 I13	
3439 E1	3558 D12	
3443 B7	3559 D12	
3444 E2	3560 D13	
3445 E3	3561 D13	
3446 E3	3563 A3	
3447 E3	3564 A3	
3448 E3	3570 G8	
3449 E3	4402 E6	
3450 E3	4403 D12	
3451 E3	4404 D13	
3452 E4	4412 F7	
3453 F5	4416 F9	
3454 E5	4417 F9	
3455 E5	4419 H9	
3456 E5	4436 A2	
3457 E5	4491 F9	
3458 E5	5401 B6	
3459 E6	5402 E4	
3460 E6	5403 E4	
3461 A2	5404 G6	
3462 E6	5405 C12	
3463 A2	6404 B1	
3464 B2	6405 B1	
3465 B2	6406 C1	
3466 B2	6407 C1	
3467 B2	6408 C8	
3468 B3	6409 C8	
3469 B3	6410 C8	
3470 B3	6411 D8	

6-5

CIRCUIT DIAGRAM - HEADPHONE / MISCELLANEOUS PART

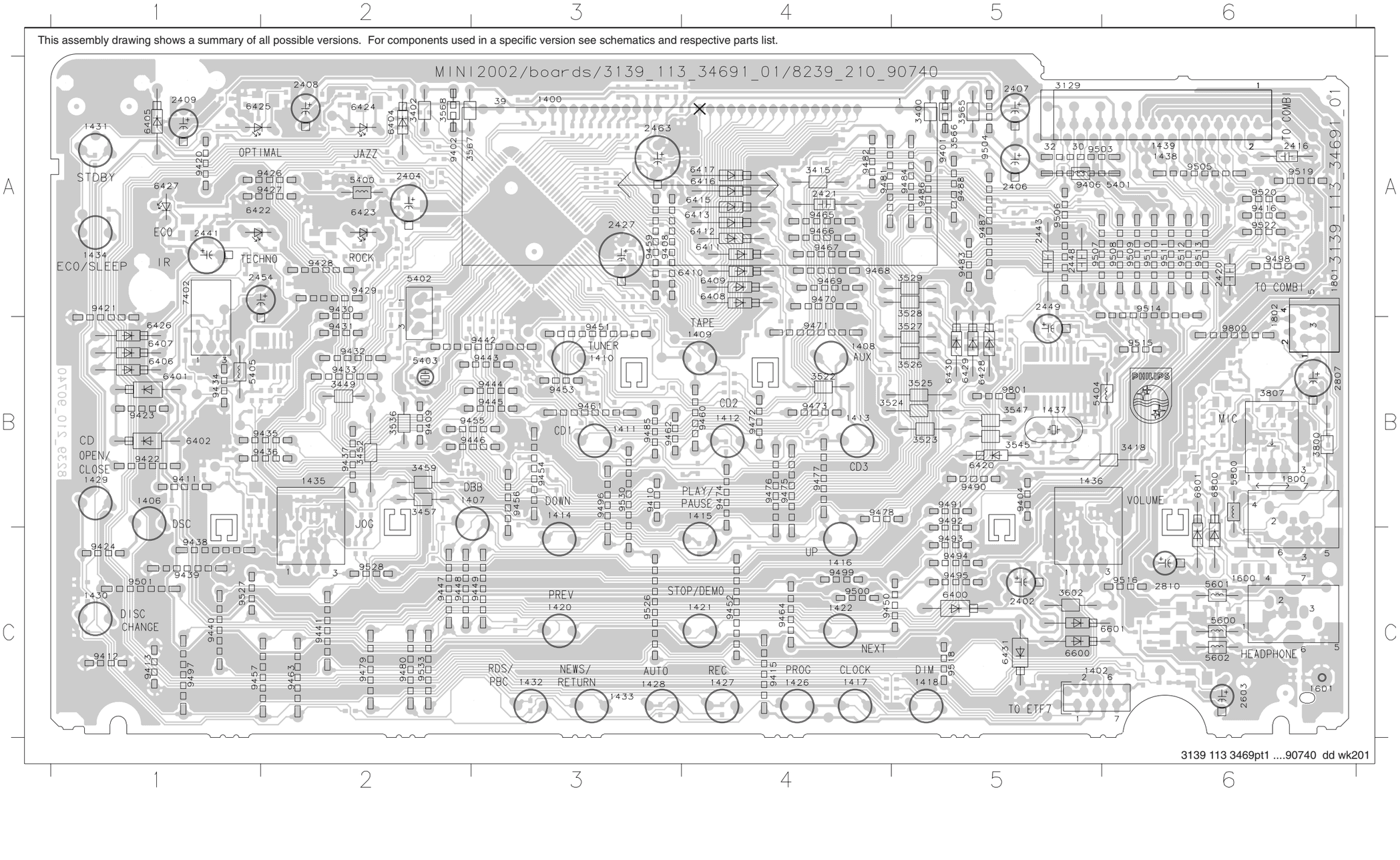
1438 A1 2400 F4 2404 B7 2408 B9 2412 A4 2416 A4 2420 A6 2424 F3 2600 D8 2606 F9 3402 B9 3408 F4 3413 A3 3417 C3 3421 C8 3567 B8 3601 E6 3605 F7 4406 F4 4410 B5 4418 B3 5400 A7 6400 A7 6600 F7 7602 F6 9410 C5 9514 F4
1439 A1 2401 A7 2405 B7 2409 B9 2413 C3 2417 A4 2421 F2 2425 C7 2601 E8 2610 E7 3402 B5 3405 F5 3410 A2 3414 C2 3418 C7 3492 F4 3568 B9 3602 D8 4400 E4 4407 F3 4411 D5 4459 F2 5600 D7 6401 A7 6601 F7 9401 A9 9416 B5
1600 E9 2402 A7 2406 A9 2410 F5 2414 A4 2418 A4 2422 F2 2426 C8 2602 F8 2611 E7 3406 E5 3411 A2 3415 C2 3419 C7 3565 A8 3569 E5 3603 D8 4401 E5 4408 C4 4414 E5 4487 A5 4490 E4 5602 E8 6420 C7 7601 E7 9404 D5 9506 F3
1601 F9 2403 A7 2407 A9 2411 F5 2415 A4 2419 A5 2423 F3 2470 B6 2603 F7 3400 A9 3407 E4 3412 A3 3416 C3 3420 C7 3566 A9 3600 E6 3604 F7 4405 F5 4409 E4 4415 A5 4490 E4 5602 E8 6420 C7 7601 E7 9404 D5 9506 F3



6-6

COMPONENT LAYOUT

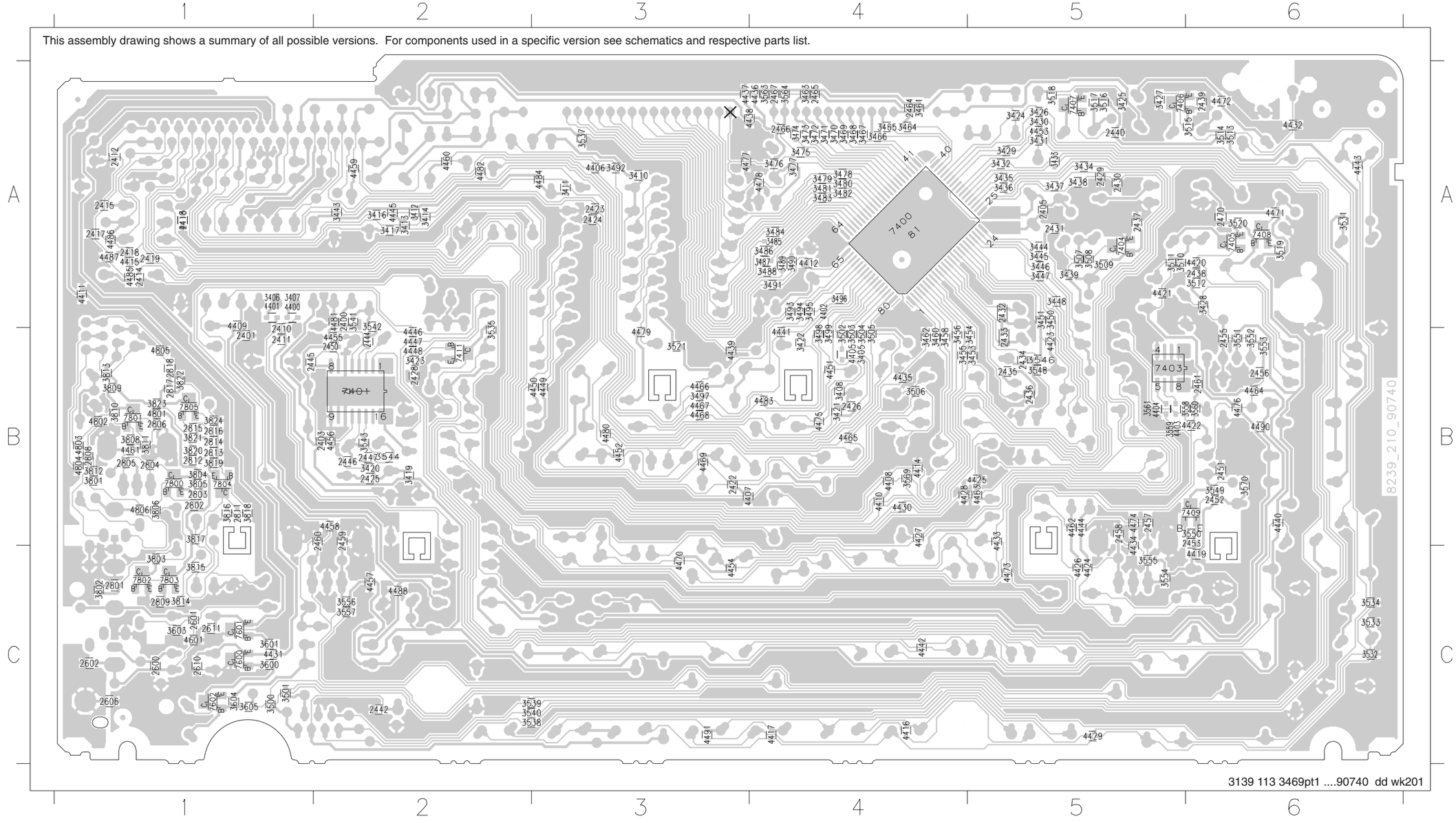
1400 A3 1417 C4 1434 A1 2406 A5 2463 A3 3523 B5 3568 A2 5800 B6 6413 A4 6430 B5 9410 B3 9428 A2 9441 C2 9454 B3 9468 A4 9481 A4 9495 C5 9509 A6 9527 C1
1402 C5 1418 C5 1435 B2 2407 A5 2603 C6 3524 B4 3602 C5 6400 C5 6415 A4 6431 C5 9411 B1 9429 A2 9442 B2 9455 B3 9469 A4 9482 A4 9496 B5 9510 A6 9528 C2
1406 B1 1420 C3 1436 B5 2408 A2 2807 B6 3525 B5 3800 B6 6401 B1 6416 A4 6600 C5 9412 C1 9430 A2 9443 A3 9456 B3 9470 A4 9483 A5 9497 C1 9511 A6 9529 C2
1407 B3 1421 C4 1437 B5 2409 A1 2810 C6 3526 B5 3807 B6 6402 B1 6417 A4 6601 C6 9413 C1 9431 A2 9444 A3 9457 B3 9471 B4 9484 A5 9498 A6 9512 A6 9530 C3
1408 B4 1422 C4 1438 A6 2416 A6 3400 A5 3527 B5 6400 A2 6404 A2 6420 B5 6800 B6 9414 C5 9432 B2 9445 A3 9458 B3 9472 B4 9485 A5 9499 C4 9513 A6 9531 C3
1409 B4 1426 C4 1439 A6 2420 A6 3402 A2 3528 A5 6401 A6 6405 A1 6422 A1 6801 B6 9415 C6 9433 B2 9446 A3 9459 B3 9473 B4 9486 A5 9500 C4 9514 A6 9532 C3
1410 B3 1427 C4 1600 C6 2421 A4 3415 A4 3529 A5 6402 A2 6406 B1 6423 A2 7402 A1 9416 C6 9434 B2 9447 A3 9460 B3 9474 B4 9487 A5 9501 C1 9515 B6 9533 C3
1411 B3 1428 C3 1601 C6 2427 A3 3418 B6 3536 B2 6403 B2 6407 B1 6424 A2 9401 A5 9417 C6 9435 B2 9448 A3 9461 B3 9475 B4 9488 A5 9502 C1 9516 C6 9800 C6
1412 B4 1429 B1 1800 B6 2441 A1 3449 B2 3545 B5 6404 B5 6408 A4 6425 A1 9402 A2 9418 C6 9436 B2 9449 A3 9462 B3 9476 B4 9489 A5 9503 A5 9517 C6 9801 C5
1413 B4 1430 C1 1801 A6 2443 A5 3452 B2 3547 B5 6405 B1 6409 A4 6426 B1 9404 B5 9419 C6 9437 B2 9450 A3 9463 B3 9477 B4 9490 A5 9504 A5 9518 C6
1414 B3 1431 A1 1802 A6 2448 A5 3457 B2 3565 A5 6409 B1 6410 A4 6427 A1 9406 A3 9420 C6 9438 B2 9451 A3 9464 B3 9478 C2 9491 A5 9505 A6 9519 C6
1415 B4 1432 C3 2402 C5 2449 A5 3459 B2 3566 A5 6410 C6 6411 A4 6428 B5 9408 A3 9422 C6 9439 C1 9452 A3 9465 B3 9479 C2 9492 A5 9506 A6 9520 C6
1416 C4 1433 C3 2404 A2 2454 A1 3522 B4 3567 A2 5602 C6 6412 A4 6429 B5 9409 B2 9427 A2 9440 C1 9453 B3 9467 A4 9480 C2 9493 A5 9507 A6 9522 C6



6-7

CHIP LAYOUT

2400	A2	2429	A5	2452	B6	2611	C1	3407	A1	3429	A5	3453	B5	3474	A4	3493	A4	3512	A6	3541	A2	3563	A4	3812	B1	4406	A3	4426	C5	4445	A2	4464	B6	4483	B4	7405	A6
2401	B1	2430	A5	2453	B6	2801	C1	3408	B4	3430	A5	3454	B5	3475	A4	3494	A4	3513	A6	3542	A2	3564	A4	3813	B1	4407	B3	4427	B4	4446	B2	4465	B4	4484	A3	7406	A5
2403	B2	2431	A5	2455	B6	2802	B1	3410	A3	3431	A5	3455	B4	3476	A4	3495	A4	3514	A6	3543	B2	3569	B4	3814	C1	4408	B4	4428	B4	4447	B2	4466	B3	4485	A1	7407	A5
2405	A5	2432	A5	2456	B6	2803	B1	3411	A3	3432	A5	3456	B4	3477	A4	3496	A4	3515	A6	3544	B2	3570	B6	3815	C1	4409	A1	4429	C5	4448	B2	4467	B3	4486	A1	7408	A6
2410	B1	2433	B5	2457	B5	2804	B1	3412	A2	3433	A5	3458	B4	3478	A4	3497	B3	3516	A5	3546	B5	3600	C1	3816	B1	4410	B4	4430	B4	4449	B3	4468	B3	4487	A1	7409	B6
2411	B1	2434	B5	2458	B5	2805	B1	3413	A2	3434	A5	3460	B4	3479	A4	3498	B4	3517	A5	3548	B5	3601	C1	3817	B1	4411	A1	4431	B4	4450	B3	4469	B3	4488	C2	7411	B2
2412	A1	2435	B5	2459	B2	2806	B1	3414	A2	3435	A5	3461	A4	3480	A4	3499	B4	3518	A5	3549	B6	3603	C1	3818	B1	4412	A4	4432	A6	4451	B4	4470	C3	4490	B6	7600	C1
2413	A1	2436	B5	2460	B2	2808	B1	3416	A2	3436	A5	3462	B4	3481	A4	3500	C1	3519	A6	3550	B6	3604	C1	3819	B1	4414	B4	4433	B5	4452	B3	4471	A6	4491	C3	7601	C1
2414	A1	2437	A5	2461	B6	2809	C1	3417	A2	3437	A5	3463	A4	3482	A4	3501	C1	3520	A6	3551	B6	3605	C1	3820	B1	4415	A1	4434	B5	4453	A5	4472	A6	4601	C1	7602	C1
2415	A1	2438	A6	2464	A4	2811	B1	3419	B2	3438	A5	3464	A4	3483	A4	3502	B4	3521	B3	3552	B6	3801	B1	3821	B1	4416	C4	4435	B4	4454	C3	4473	C5	4801	B1	7800	B1
2417	A1	2439	A6	2465	A4	2812	B1	3420	B2	3439	A5	3465	A4	3484	A4	3503	B4	3531	A6	3553	B6	3802	C1	3822	B1	4417	C4	4436	A4	4455	B2	4474	B5	4802	B1	7801	B1
2418	A1	2440	A5	2466	A4	2813	B1	3421	B4	3443	A2	3466	A4	3485	A4	3504	B4	3532	C6	3554	C5	3803	C1	3823	B1	4418	A1	4437	A3	4456	B2	4475	B4	4803	B1	7802	C1
2419	A1	2442	C2	2467	A4	2814	B1	3422	B4	3444	A5	3467	A4	3486	A4	3505	B4	3533	C6	3555	C5	3804	B1	3824	B1	4419	C6	4438	A3	4457	C2	4476	B6	4804	B1	7803	C1
2422	B3	2444	B2	2470	A6	2815	B1	3423	B2	3445	A5	3468	A4	3487	A4	3506	B4	3534	C6	3556	C2	3805	B1	4400	A1	4420	A6	4439	B3	4458	B2	4477	A3	4805	B1	7804	B1
2423	A3	2445	B1	2600	C1	2816	B1	3424	A5	3446	A5	3469	A4	3488	A4	3507	C1	3535	B2	3557	C2	3806	B1	4401	A1	4421	A5	4440	B6	4459	A2	4478	A4	4806	B1	7805	B1
2424	A3	2446	B2	2601	C1	2817	B1	3425	A5	3447	A5	3470	A4	3489	A4	3508	A5	3537	A3	3558	B5	3808	B1	4402	A4	4422	B6	4441	B4	4460	B2	4479	B3	7400	A4		
2425	B2	2447	B2	2602	C1	2818	B1	3426	A5	3448	A5	3471	A4	3490	A4	3509	A5	3538	C2	3559	B5	3809	B1	4403	B5	4423	B5	4442	C4	4461	B1	4480	B3	7401	B2		
2426	B4	2450	B2	2606	C1	3405	B4	3427	A5	3450	A5	3472	A4	3491	A4	3510	A5	3539	C2	3560	B6	3810	B1	4404	B5	4424	C5	4443	A6	4462	B5	4481	A2	7403	B5		
2428	B2	2451	B6	2610	C1	3406	A1	3428	A6	3451	A5	3473	A4	3492	A3	3511	A5	3540	C2	3561	B5	3811	B1	4405	B4	4425	B5	4444	B5	4463	B5	4482	A2	7404	A5		



6-8

ELECTRICAL PARTS LIST - FRONT BOARD

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	3139 110 52850	FTD Display 12-ST-29GNK
1402	4822 267 10953	Flex Socket 7pin Vert.
1406	2422 128 02917	Tact Switch
1407	2422 128 02917	Tact Switch
1408	2422 128 02917	Tact Switch
1409	2422 128 02917	Tact Switch
1410	2422 128 02917	Tact Switch
1411	2422 128 02917	Tact Switch
1412	2422 128 02917	Tact Switch
1413	2422 128 02917	Tact Switch
1414	2422 128 02917	Tact Switch
1415	2422 128 02917	Tact Switch
1416	2422 128 02917	Tact Switch
1417	2422 128 02917	Tact Switch
1418	2422 128 02917	Tact Switch
1420	2422 128 02917	Tact Switch
1421	2422 128 02917	Tact Switch
1422	2422 128 02917	Tact Switch
1426	2422 128 02917	Tact Switch
1427	2422 128 02917	Tact Switch
1428	2422 128 02917	Tact Switch
1429	2422 128 02917	Tact Switch
1430	2422 128 02917	Tact Switch
1431	2422 128 02917	Tact Switch
1432	2422 128 02917	Tact Switch
1433	2422 128 02917	Tact Switch
1434	2422 128 02917	Tact Switch
1435	2422 129 16707	Rotary Encoder 24P
1436	2422 129 16708	Rotary Encoder 24P
1437	4822 242 11033	X'tal Resonator 4,332MHz
1438	2422 025 17413	Flex Socket 32pin Hort.
1439	2422 025 17414	Flex Socket 30pin Hort.
1600	2422 026 05059	Headphone Socket
1800	2422 026 05059	Mic Socket /21
1802	4822 265 11183	Flex Socket 4pin Hort.

CAPACITORS

2402	4822 124 23432	100µF 20% 10V
2403	2238 586 59812	100nF +80/-20% 50V
2404	4822 124 23432	100µF 20% 10V
2405	2238 586 59812	100nF +80/-20% 50V
2406	4822 124 12032	4,7µF 20% 50V
2407	4822 124 12032	4,7µF 20% 50V
2408	4822 124 12032	4,7µF 20% 50V
2409	4822 124 12032	4,7µF 20% 50V
2412	2238 586 59812	100nF +80/-20% 50V
2425	3198 017 34730	47nF 16V
2426	4822 126 13879	220nF +80/-20% 16V
2427	3198 028 52290	22µF 20% 50V
2428	3198 017 41050	1µF 10V
2432	2222 867 15339	33pF 5% 50V
2433	2222 867 15339	33pF 5% 50V
2434	5322 126 11583	10nF 10% 50V
2435	4822 122 33752	15pF 5% 50V
2436	4822 122 33752	15pF 5% 50V
2443	4822 122 33197	1nF 10% 50V
2444	4822 126 14249	560pF 10% 50V
2445	4822 126 14249	560pF 10% 50V
2446	4822 122 33777	47pF 5% 63V
2447	4822 122 33777	47pF 5% 63V
2448	4822 126 12785	47nF +80/-20% 50V
2449	4822 124 22652	2,2µF 20% 50V
2451	2238 586 59812	100nF +80/-20% 50V
2452	2238 586 59812	100nF +80/-20% 50V
2453	5322 126 11583	10nF 10% 50V
2454	4822 124 12032	4,7µF 20% 50V
2456	4822 126 14238	2,2nF 50V
2457	5322 126 11583	10nF 10% 50V
2458	5322 126 11583	10nF 10% 50V
2459	5322 126 11583	10nF 10% 50V
2460	5322 126 11583	10nF 10% 50V
2461	2238 586 59812	100nF +80/-20% 50V
2463	3198 028 52290	22µF 20% 50V
2600	4822 126 14494	22nF 10% 25V
2601	4822 126 14494	22nF 10% 25V
2602	2238 586 59812	100nF +80/-20% 50V
2603	4822 124 22651	1,0µF 20% 50V
2801	4822 126 13193	4,7nF 10% 63V
2802	2238 586 59812	100nF +80/-20% 50V
2803	5322 126 11578	1nF 10% 50V
2804	3198 017 44740	470nF 10V
2805	3198 017 44740	470nF 10V
2806	4822 126 13909	680pF 10% 50V
2807	4822 124 81286	47µF 20% 16V
2808	3198 017 41050	1µF 10V

RESISTORS

3400	4822 050 24708	4R7 1% 0,6W
3402	4822 050 24708	4R7 1% 0,6W
3410	4822 051 30103	10k 5% 0,062W
3411	4822 051 30103	10k 5% 0,062W
3412	4822 051 30103	10k 5% 0,062W
3413	4822 051 30103	10k 5% 0,062W
3414	4822 051 30102	1k 5% 0,062W
3415	4822 050 11002	1k 1% 0,4W
3416	4822 051 30102	1k 5% 0,062W
3417	4822 051 30102	1k 5% 0,062W
3418	4822 116 52243	1k5 5% 0,5W
3419	4822 117 12864	82k 5% 0,6W
3420	4822 117 12864	82k 5% 0,6W
3421	4822 051 30474	470k 5% 0,062W
3422	4822 051 30102	1k 5% 0,062W
3423	4822 051 30103	10k 5% 0,062W
3424	4822 051 30102	1k 5% 0,062W
3425	4822 051 30103	10k 5% 0,062W
3426	4822 051 30102	1k 5% 0,062W
3427	4822 051 30103	10k 5% 0,062W
3428	4822 051 30103	10k 5% 0,062W
3429	4822 051 30102	1k 5% 0,062W
3430	4822 051 30102	1k 5% 0,062W
3431	4822 051 30102	1k 5% 0,062W
3432	4822 051 30102	1k 5% 0,062W
3433	4822 051 30102	1k 5% 0,062W
3434	4822 051 30102	1k 5% 0,062W
3435	4822 051 30102	1k 5% 0,062W
3436	4822 051 30102	1k 5% 0,062W
3437	4822 051 30102	1k 5% 0,062W
3438	4822 051 30102	1k 5% 0,062W
3439	4822 051 30103	10k 5% 0,062W
3443	4822 051 30102	1k 5% 0,062W
3444	4822 051 30102	1k 5% 0,062W
3445	4822 051 30102	1k 5% 0,062W
3446	4822 051 30102	1k 5% 0,062W
3447	4822 051 30102	1k 5% 0,062W
3448	4822 051 30102	1k 5% 0,062W
3449	4822 050 11002	1k 1% 0,4W
3450	4822 051 30102	1k 5% 0,062W
3451	4822 051 30102	1k 5% 0,062W
3452	4822 050 21003	10k 1% 0,6W
3453	4822 051 30103	10k 5% 0,062W
3454	4822 051 30102	1k 5% 0,062W
3455	4822 051 30102	1k 5% 0,062W
3456	4822 051 30102	1k 5% 0,062W
3457	4822 050 21003	10k 1% 0,6W
3458	4822 051 30102	1k 5% 0,062W
3459	4822 050 21003	10k 1% 0,6W
3460	4822 051 30102	1k 5% 0,062W
3462	4822 051 30105	1M 5% 0,062W
3464	4822 051 30102	1k 5% 0,062W
3465	4822 051 30102	1k 5% 0,062W
3466	4822 051 30102	1k 5% 0,062W
3467	4822 051 30102	1k 5% 0,062W
3468	4822 051 30102	1k 5% 0,062W
3469	4822 051 30102	1k 5% 0,062W
3470	4822 051 30102	1k 5% 0,062W
3471	4822 051 30102	1k 5% 0,062W
3472	4822 051 30102	1k 5% 0,062W
3473	4822 051 30102	1k 5% 0,062W
3474	4822 051 30102	1k 5% 0,062W
3475	4822 051 30102	1k 5% 0,062W
3476	4822 051 30102	1k 5% 0,062W
3477	4822 051 30102	1k 5% 0,062W
3478	4822 051 30102	1k 5% 0,062W
3479	4822 051 30102	1k 5% 0,062W
3480	4822 051 30102	1k 5% 0,062W
3481	4822 051 30102	1k 5% 0,062W
3482	4822 051 30102	1k 5% 0,062W
3483	4822 051 30102	1k 5% 0,062W
3484	4822 051 30102	1k 5% 0,062W
3485	4822 051 30102	1k 5% 0,062W
3486	4822 051 30102	1k 5% 0,062W
3487	4822 051 30102	1k 5% 0,062W
3488	4822 051 30102	1k 5% 0,062W
3489	4822 051 30102	1k 5% 0,062W
3490	4822 051 30102	1k 5% 0,062W
3491	4822 051 30102	1k 5% 0,062W
3492	4822 117 12968	820R 5% 0,62W
3493	4822 051 30102	1k 5% 0,062W
3494	4822 051 30102	1k 5% 0,062W
3495	4822 051 30102	1k 5% 0,062W
3496	4822 051 30102	1k 5% 0,062W
3497	4822 051 30102	1k 5% 0,062W
3498	4822 051 30102	1k 5% 0,062W
3499	4822 051 30102	1k 5% 0,062W
3500	4822 051 30102	1k 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W
3502	4822 051 30102	1k 5% 0,062W
3503	4822 051 30102	1k 5% 0,062W
3504	4822 051 30101	100R 5% 0,062W
3505	4822 051 30102	1k 5% 0,062W
3507	4822 051 30471	470R 5% 0,062W
3508	4822 051 30471	470R 5% 0,062W
3509	4822 051 30103	10k 5% 0,062W
3510	4822 051 30471	470R 5% 0,062W
3511	4822 051 30471	470R 5% 0,062W
3512	4822 051 30103	10k 5% 0,062W
3513	4822 051 30471	470R 5% 0,062W
3514	4822 051 30471	470R 5% 0,062W
3515	4822 051 30103	10k 5% 0,062W
3516	4822 051 30471	470R 5% 0,062W
3517	4822 051 30471	470R 5% 0,062W
3518	4822 051 30103	10k 5% 0,062W
3519	4822 117 12968	820R 5% 0,62W
3520	4822 117 12925	47k 1% 0,063W
3521	4822 051 30331	330R 5% 0,062W
3522	4822 116 52219	330R 5% 0,5W
3523	4822 116 52219	330R 5% 0,5W
3524	4822 116 52219	330R 5% 0,5W
3525	4822 116 52219	330R 5% 0,5W
3526	4822 116 52219	330R 5% 0,5W
3527	4822 116 52219	330R 5% 0,5W
3528	4822 116 52219	330R 5% 0,5W
3529	4822 116 52219	330R 5% 0,5W
3531	4822 051 30103	10k 5% 0,062W
3532	4822 051 30474	470k 5% 0,062W
3533	4822 051 30474	470k 5% 0,062W
3534	4822 051 30474	470k 5% 0,062W
3535	4822 051 30472	4k7 5% 0,062W

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3536	4822 050 11002	1k 1% 0,4W
3537	4822 051 30474	470k 5% 0,062W
3538	4822 051 30102	1k 5% 0,062W
3539	4822 051 30102	1k 5% 0,062W
3540	4822 051 30102	1k 5% 0,062W
3541	4822 051 30103	10k 5% 0,062W
3542	4822 051 30152	1k5 5% 0,062W
3543	4822 117 12891	220k 1% ERJ3E
3544	4822 051 30222	2k2 5% 0,062W
3545	4822 050 21003	10k 1% 0,6W
3546	4822 051 30103	10k 5% 0,062W
3547	4822 050 21003	10k 1% 0,6W
3548	4822 051 30103	10k 5% 0,062W
3549	4822 051 30103	10k 5% 0,062W /21/34
3550	4822 117 13632	100k 1% 0,62W
3551	4822 051 30101	100R 5% 0,062W
3552	4822 051 30103	10k 5% 0,062W
3553	4822 051 30102	1k 5% 0,062W
3554	4822 051 30103	10k 5% 0,062W
3555	4822 051 30103	10k 5% 0,062W
3556	4822 051 30103	10k 5% 0,062W
3557	4822 051 30103	10k 5% 0,062W
3558	4822 051 30682	6k8 5% 0,062W
3559	4822 051 30102	1k 5% 0,062W
3560	4822 051 30682	6k8 5% 0,062W
3561	4822 051 30102	1k 5% 0,062W
3565	4822 050 24708	4R7 1% 0,6W /21
3565	4822 116 81154	2R2 5% 0,5W /22
3566	4822 116 81154	2R2 5% 0,5W /22
3567	4822 050 24708	4R7 1% 0,6W /21
3567	4822 116 81154	2R2 5% 0,5W /22
3568	4822 116 81154	2R2 5% 0,5W /22
3569	4822 051 30103	10k 5% 0,062W
3570	4822 117 13632	100k 5% 0,063W /22
3600	4822 051 30102	1k 5% 0,062W
3601	4822 051 30102	1k 5% 0,062W
3602	4822 050 11002	1k 1% 0,4W
3603	4822 051 30472	4k7 5% 0,062W
3604	4822 051 30472	4k7 5% 0,062W
3605	4822 051 30103	10k 5% 0,062W
3800	4822 116 52283	4k7 5% 0,5W
3801	4822 051 30682	6k8 5% 0,062W
3802	4822 051 30103	10k 5% 0,062W
3803	4822 051 30103	10k 5% 0,062W
3804	4822 051 30272	2k7 5% 0,062W
3805	4822 051 30105	1M 5% 0,062W
3806	4822 051 30339	33R 5% 0,062W
3807	2120 366 90292	Potm Rotary 20k
3808	4822 051 30471	470R 5% 0,062W
3809	4822 051 30561	560R 5% 0,062W
3810	4822 051 30105	1M 5% 0,062W
3811	4822 051 30331	330R 5% 0,062W
3812	4822 051 30103	10k 5% 0,062W
3813	4822 051 30471	470R 5% 0,062W
4400	4822 051 30008	0R Jumper 0603
4401	4822 051 30008	0R Jumper 0603
4405	4822 051 30008	0R Jumper 0603
4406	4822 051 30008	0R Jumper 0603
4408	4822 051 30008	0R Jumper 0603
4409	4822 051 30008	0R Jumper 0603
4411	4822 051 30008	0R Jumper 0603
4412	4822 051 30008	0R Jumper 0603
4414	4822 051 30008	0R Jumper 0603
4416	4822 051 30008	0R Jumper 0603
4417	4822 051 30008	0R Jumper 0603
4418	4822 051 30008	0R Jumper 0603
4419	4822 051 30008	0R Jumper 0603
4420	4822 051 30008	0R Jumper 0603
4421	4822 051 30008	0R Jumper 0603
4422	4822 051 30008	0R Jumper 0603
4423	4822 051 30008	0R Jumper 0603
4424	4822 051 30008	0R Jumper 0603
4425	4822 051 30008	0R Jumper 0603
4426	4822 051 30008	0R Jumper 0603
4427	4822 051 30008	0R Jumper 0603
4428	4822 051 30008	0R Jumper 0603
4429	4822 051 30008	0R Jumper 0603
4430	4822 051 30008	0R Jumper 0603
4431	4822 051 30008	0R Jumper 0603
4432	4822 051 30008	0R Jumper 0603
4433	4822 051 30008	0R Jumper 0603
4434	4822 051 30008	0R Jumper 0603
4435	4822 051 30008	0R Jumper 0603
4437	4822 051 30008	0R Jumper 0603
4438	4822 051 30008	0R Jumper 0603
4439	4822 051 30008	0R Jumper 0603
4440	4822 051 30008	0R Jumper 0603
4441	4822 051 30008	0R Jumper 0603
4442	4822 051 30008	0R Jumper 0603
4443	4822 051 30008	0R Jumper 0603
4444	4822 051 30008	0R Jumper 0603
4445	4822 051 30008	0R Jumper 0603
4446	4822 051 30008	0R Jumper 0603
4447	4822 051 30008	0R Jumper 0603
4448	4822 051 30008	0R Jumper 0603
4449	4822 051 30008	0R Jumper 0603
4450	4822 051 30008	0R Jumper 0603
4451	4822 051 30008	0R Jumper 0603
4452	4822 051 30008	0R Jumper 0603
4453	4822 051 30008	0R Jumper 0603
4454	4822 051 30008	0R Jumper 0603
4455	4822 051 30008	0R Jumper 0603
4456	4822 051 30008	0R Jumper 0603
4457	4822 051 30008	0R Jumper 0603

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

4458	4822 051 30008	0R Jumper 0603
4459	4822 051 30008	0R Jumper 0603
4460	4822 051 30008	0R Jumper 0603
4461	4822 051 30008	0R Jumper 0603
4462	4822 051 30008	0R Jumper 0603
4463	4822 051 30008	0R Jumper 0603
4464	4822 051 30008	0R Jumper 0603
4465	4822 051 30008	0R Jumper 0603
4466	4822 051 30008	0R Jumper 0603
4467	4822 051 30008	0R Jumper 0603
4468	4822 051 30008	0R Jumper 0603
4469	4822 051 30008	0R Jumper 0603
4470	4822 051 30008	0R Jumper 0603
4471	4822 051 30008	0R Jumper 0603
4472	4822 051 30008	0R Jumper 0603
4473	4822 051 30008	0R Jumper 0603
4474	4822 051 30008	0R Jumper 0603
4475	4822 051 30008	0R Jumper 0603
4476	4822 051 30008	0R Jumper 0603
4477	4822 051 30008	0R Jumper 0603
4478	4822 051 30008	0R Jumper 0603
4479	4822 051 30008	0R Jumper 0603
4480	4822 051 30008	0R Jumper 0603
4481	4822 051 30008	0R Jumper 0603
4482	4822 051 30008	0R Jumper 0603
4483	4822 051 30008	0R Jumper 0603
4484	4822 051 30008	0R Jumper 0603
4485	4822 051 30008	0R Jumper 0603
4486	4822 051 30008	0R Jumper 0603
4488	4822 051 30008	0R Jumper 0603
4490	4822 051 30008	0R Jumper 0603
4491	4822 051 30008	0R Jumper 0603
4601	4822 051 30008	0R Jumper 0603
4801	4822 051 30008	0R Jumper 0603
4802	4822 051 30008	0R Jumper 0603
4803	4822 051 30008	0R Jumper 0603
4804	4822 051 30008	0R Jumper 0603
4805	4822 051 30008	0R Jumper 0603
4806	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5400	4822 157 62552	Coil 2,2µH 5%
5402	4822 242 72066	Ceram Resonator 8MHz
5403	2422 543 01069	X'tal Resonator 32,768kHz
5404	4822 157 62552	Coil 2,2µH 5%
5405	4822 157 62552	Coil 2,2µH 5%
5600	4822 157 62552	Coil 2,2µH 5%
5601	4822 157 62552	Coil 2,2µH 5%
5602	4822 157 62552	Coil 2,2µH 5%
5800	4822 157 11235	Coil 22µH 5%

DIODES

6400	4822 130 31878	1N4003G
6401	4822 130 31878	1N4003G
6402	4822 130 31878	1N4003G
6404	4822 130 30621	1N4148
6405	4822 130 30621	1N4148
6406	4822 130 30621	1N4148
6407	4822 130 30621	1N4148
6408	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 30621	1N4148
6411	4822 130 30621	1N4148
6412	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6415	4822 130 30621	1N4148
6416	4822 130 30621	1N4148
6417	4822 130 30621	1N4148
6420	4822 130 30621	1N4148
6422	9322 178 15676	LTL-8166FTNN
6423	9322 178 15676	LTL-8166FTNN
6424	9322 178 15676	LTL-8166FTNN
6425	9322 178 15676	LTL-8166FTNN
6426	4822 130 30621	1N4148
6427	9322 179 76676	LTL-816EELC
6428	4822 130 30621	1N4148
6429	4822 130 30621	1N4148
6430	4822 130 30621	1N4148
6600	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7400	3139 110 53221	TMP87CS71F "C355S53221"
7401	9352 679 67118	SAA6579T/V1/M4
7402	9322 155 22667	IR Receiver TSOP2236ZC1
7403	9965 000 04931	M24C01-WMN6
7404	4822 130 60511	BC847B
7405	4822 130 60511	BC847B
7406	4822 130 60511	BC847B
7407	4822 130 60511	BC847B
7408	4822 130 60373	BC857B
7409	4822 130 60511	BC847B
7411	4822 130 60511	BC847B
7600	4822 130 42804	BC817-25
7601	4822 130 42804	BC817-25
7602	4822 130 60373	BC857B
7800	4822 130 60511	BC847B
7801	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

MAINS BOARD

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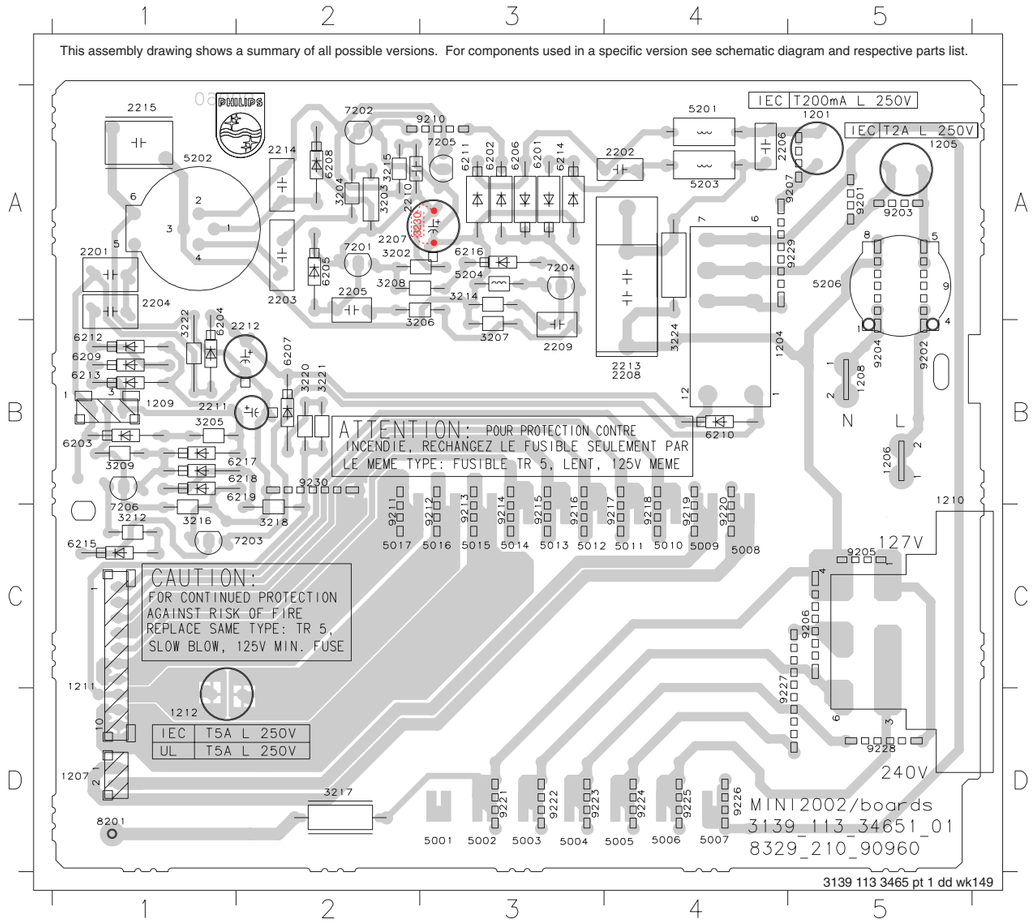
Circuit Diagram 8-2
Electrical parts list 8-3

COMPONENT LAYOUT

1201 A51211 C12207 A22215 A13209 B13221 B25006 D45014 C35206 A56208 A26216 A37205 A39206 C59216 C39224 D4
1204 B41212 D12208 B43202 A23212 C13222 B15007 D45015 C36201 A36209 B16217 B27206 C19207 A59217 C49225 D4
1205 A52201 A12209 B33203 A23214 A33224 B45008 C45016 C36202 A36210 B46218 B28201 D19210 A39218 C49226 D4
1206 B52202 A42210 A23204 A23215 A25001 D35009 C45017 C26203 B16211 A36219 B29201 A59211 C29219 C49227 D4
1207 D12203 A22211 B13205 B13216 C15002 D35010 C45201 A46204 B16212 B17201 A29202 B59212 C39220 C49228 D5
1208 B52204 A12212 B23206 B23217 D25003 D35011 C45202 A16205 A26213 B17202 A29203 A59213 C39221 D39229 A5
1209 B12205 A22213 B43207 B33218 C25004 D35012 C35203 A46206 A36214 A37203 C29204 B59214 C39222 D39230 B2
1210 B52206 A42214 A23208 A23220 B25005 D45013 C35204 A36207 B26215 C17204 A39205 C59215 C39223 D3

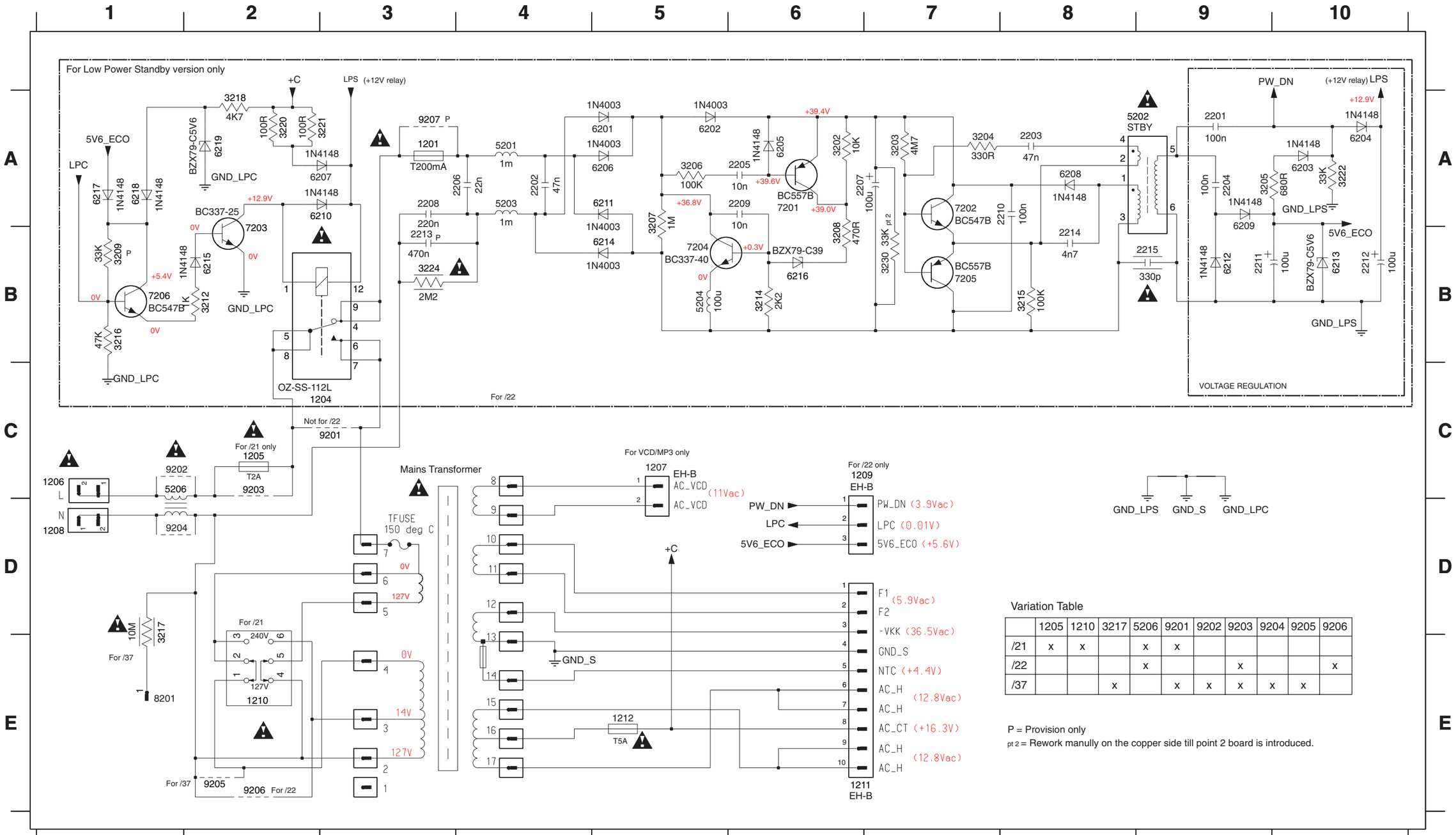

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
IEC T200mA L 250V
IEC T2A L 250V
ATTENTION: POUR PROTECTION CONTRE INCENDIE, REMPLACEZ LE FUSIBLE SEULEMENT PAR LE MEME TYPE: FUSIBLE TR 5, LENT, 125V MEME
CAUTION:
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE SAME TYPE: TR 5, SLOW BLOW, 125V MIN. FUSE
IEC T5A L 250V
UL T5A L 250V
127V
240V
MINI2002/boards
3139_113_34651_01
8329_210_90960
3139 113 3465 pt 1 dd wk149

3230 is soldered manuall on the copper side for pt 1 pcb

8-2

MAINS CIRCUIT

1201 A3 1204 C3 1205 C2 1206 C1 | 1207 C5 1208 D1 1209 C6 1210 E2 | 1211 E6 1212 E5 2201 A9 2202 A4 | 2203 A8 2204 A9 2205 A6 2206 A4 | 2207 A6 2208 A3 2209 A6 2210 A8 | 2211 B9 2212 B10 2213 B3 2214 B8 | 2215 B9 3202 A6 3203 A7 3204 A7 | 3205 A9 3206 A5 3207 A5 3208 B6 | 3209 B1 3212 B2 3214 B6 3215 B8 | 3216 B1 3217 D1 3218 A2 3220 A2 | 3221 A2 3222 A10 3224 B3 3230 B7 | 5201 A4 5202 A8 5203 A4 5204 B5 | 5206 C1 6201 A5 6202 A5 6203 A10 | 6204 A10 6205 A6 6206 A5 6207 A3 | 6208 A8 6209 A9 6210 A3 6211 A5 | 6212 B9 6213 B10 6214 B5 6215 B2 | 6216 B6 6217 A1 6218 A1 6219 A2 | 7201 A6 7202 A7 7203 B2 7204 B5 | 7205 B7 7206 B1 8201 E1 9201 C3 | 9202 C1 9203 C2 9204 D1 9205 E2 | 9206 E2 9207 A3



Variation Table

	1205	1210	3217	5206	9201	9202	9203	9204	9205	9206
/21	x	x		x	x					
/22				x			x			x
/37			x		x	x	x	x	x	

P = Provision only

pt 2 = Rework manully on the copper side till point 2 board is introduced.

ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1201	4822 071 52001	⚠	Fuse T200mA 250V	/22
1204	2422 132 07519	⚠	Relay 1P 12V 16A	
1205	9965 000 07788	⚠	Fuse T2A 250V	/21
1210	2422 129 16478	⚠	Voltage Selector	/21
1212	4822 071 55002	⚠	Fuse T5A 250V	

CAPACITORS

2201	5322 121 42386		100nF 5% 63V
2202	4822 121 43526		47nF 5% 250V
2203	4822 122 33449		47nF 30% 50V
2204	5322 121 42386		100nF 5% 63V
2205	4822 122 30043		10nF 80% 63V
2206	4822 121 41856		22nF 5% 250V
2207	4822 124 40255		100µF 20% 63V
2208	4822 121 10512		220nF 20% 275V
2209	4822 122 30043		10nF 80% 63V
2210	2020 561 90365		100nF +80/-20% 50V
2211	4822 124 41584		100µF 20% 10V
2212	4822 124 40207		100µF 20% 25V
2214	5322 122 32261		4,7nF 10% 100V
2215	4822 126 13867	⚠	330pF 20% 250V

RESISTORS

3202	4822 050 21003		10k 1% 0,6W
3203	4822 050 24705		4M7 1% 0,6W
3204	4822 116 52219		330R 5% 0,5W
3205	4822 116 52228		680R 5% 0,5W
3206	4822 116 52234		100k 5% 0,5W
3207	4822 116 83866		1M 5% 0,5W
3208	4822 116 83883		470R 5% 0,5W
3212	4822 050 11002		1k 1% 0,4W
3214	4822 116 52256		2k2 5% 0,5W
3215	4822 116 52234		100k 5% 0,5W
3216	4822 116 83884		47k 5% 0,5W
3218	4822 116 52283		4k7 5% 0,5W
3220	4822 116 52175		100R 5% 0,5W
3221	4822 116 52175		100R 5% 0,5W
3222	4822 050 23303		33k 5% 1/6W
3224	4822 053 21225	⚠	2M2 5% 0,5W
3230	4822 050 23303		33k 5% 1/6W

COILS & FILTERS

5201	4822 157 53473		Coil 1000µH 10%
5202	2422 549 45157	⚠	Standby Transformer
5203	4822 157 53473		Coil 1000µH 10%
5204	4822 157 52333		Coil 100µH 5%
5206	4822 157 11832	⚠	Mains Filter 400µH 3A

DIODES

6201	4822 130 31878	1N4003G
6202	4822 130 31878	1N4003G
6203	4822 130 30621	1N4148
6204	4822 130 30621	1N4148
6205	4822 130 30621	1N4148
6206	4822 130 31878	1N4003G
6207	4822 130 30621	1N4148
6208	4822 130 30621	1N4148
6209	4822 130 30621	1N4148
6210	4822 130 30621	1N4148
6211	4822 130 31878	1N4003G
6212	4822 130 30621	1N4148
6213	4822 130 34173	BZX79-B5V6
6214	4822 130 31878	1N4003G
6215	4822 130 30621	1N4148
6216	4822 130 34145	BZX79-B39
6217	4822 130 30621	1N4148
6218	4822 130 30621	1N4148
6219	4822 130 34173	BZX79-B5V6

TRANSISTORS & INTEGRATED CIRCUITS

7201	4822 130 44568	BC557B
7202	4822 130 40959	BC547B
7203	4822 130 40981	BC337-25
7204	4822 130 40855	BC337-40
7205	4822 130 44568	BC557B
7206	4822 130 40959	BC547B

Note: Only the parts mentioned in this list are normal service spare parts.

ETF7 TAPE MODULE

(Non-Dolby Version)

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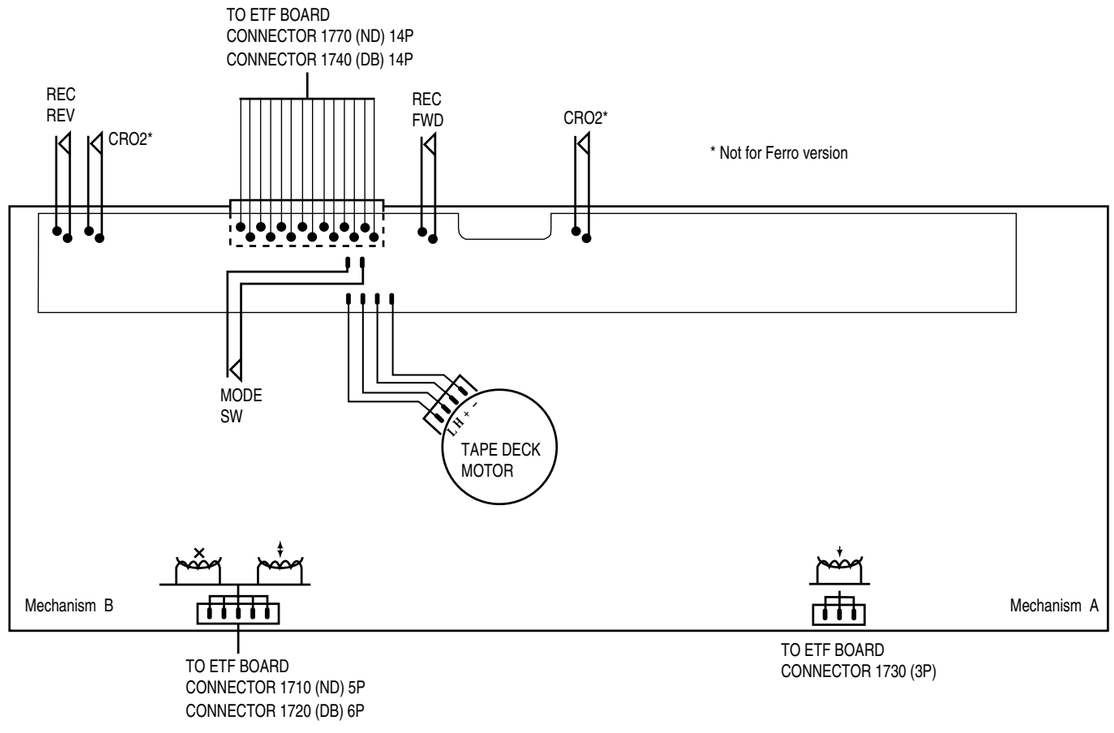
9-1

Tapedeck wiring (Double deck)



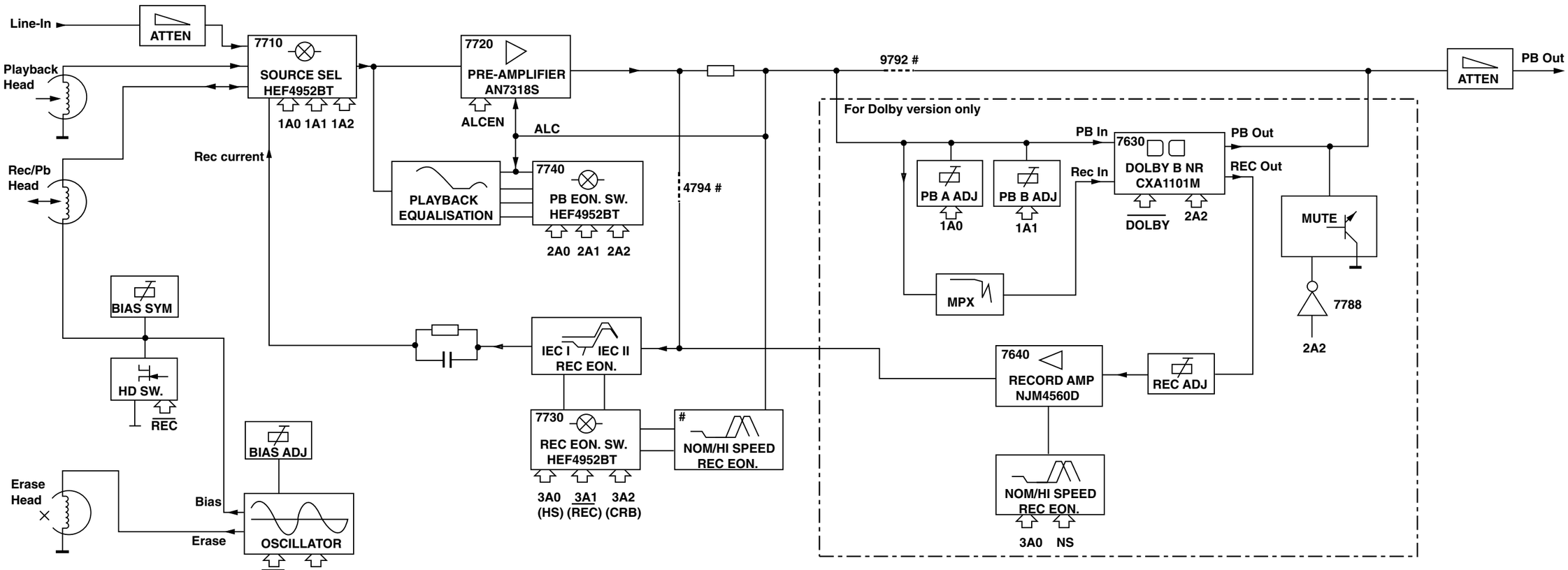
Variations table for Analog Circuit

	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
2624	-	-	100nF
2701 , 2702	150pF	270pF	270pF
2703 , 2704	100pF	220pF	220pF
2717 , 2718	10nF	15nF	15nF
2721 , 2722	6,8nF	6,8nF	-
2727 , 2728	470pF	1nF	1nF
3616	10k	1k	1k
3618	6k8	-	-
3620	10k trimmer	-	-
3622	-	10k trimmer	10k trimmer
3672	4k7	-	-
3676	47k	-	-
3687	220R	220R	-
3688	680R	-	-
3723 , 3724	15k	18k	18k
3725 , 3726	10R	10R	-
3727 , 3728	5k6	6k8	6k8
3729 , 3730	3k3	4k7	4k7
3743 , 3744	1k5	2k2	2k2
3745 , 3746	3k3	5k6	5k6
3754 , 3755	1M	47R	47R

	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
3769	12k	8k2	8k2
3772	6k8	5k6	5k6
4785	-	-	0R jumper
3774	15k	8k2	8k2
6614	1N4148	-	-
7616	BC857B	-	-
7622	BC847B	-	-

9-2

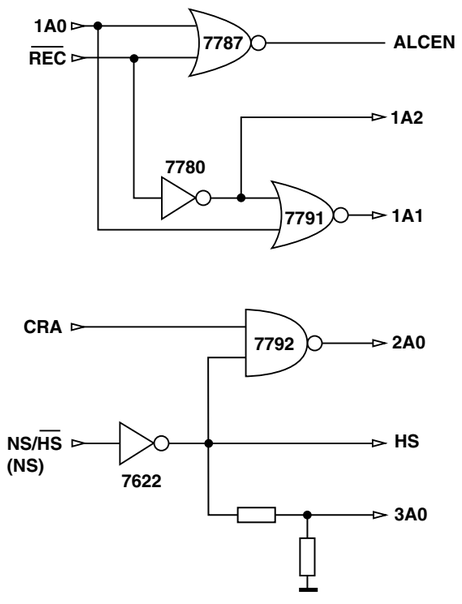
BLOCK DIAGRAM

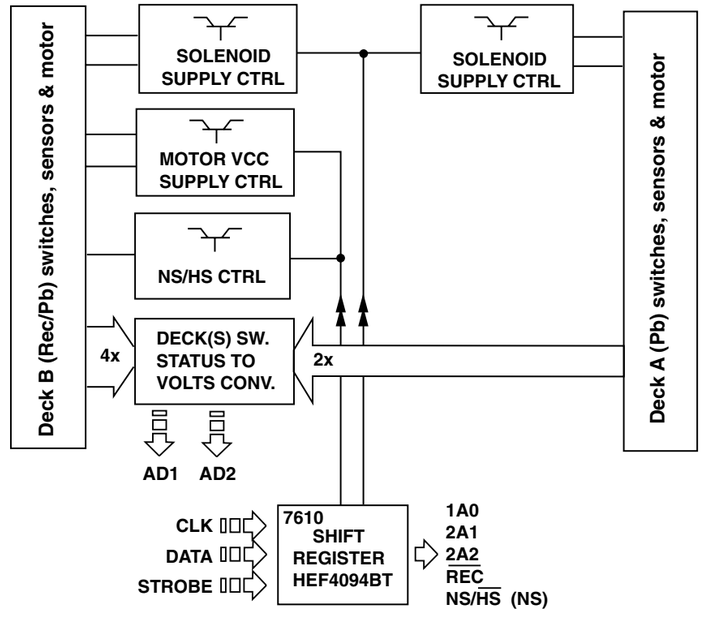


NOTE: # For Non-dolby version only
Only 1 channel is presented.

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers





9-3

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7323S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7323S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then equalised for playback mode by the amplifier IC7720 (AN7323S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952BT) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7323S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby version only)
   Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952BT)
   The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952BT)
   The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby B NR version only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby B NR version only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed (For FR versions only)
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

Dolby Circuit (For sets with Dolby B NR version only)

15. IC7630 (CXA1551M)
    IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/ LOW for NR OFF/ON.

16. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non-Autoreverse
FR	Autoreverse Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

9-4

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF BOARD

1	REC-L	Record input left
2	REC-R	Record input right
3	GND A	AF Ground
4	TAPE-L	Playback output left
5	+12V	D.C. supply (+12V) for AF electronics
6	TAPE-R	Playback output right
7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 — INTERCONNECTION TO AF BOARD

1	GND M	Motor Ground
2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

1	AD2	Deck sensing switches output voltage / Deck A EOT
2	AD1	Deck sensing switches output voltage / Deck B EOT
3	+5V	DC supply +5V for ADC network
4	GND P	Control & Oscillator Ground
5	CLK	HEF4094BT shift register Clock line
6	DATA	HEF4094BT shift register Data line
7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 — DECK B HEADS CONNECTON ***(For Non-Dolby version only)***

1	B R/P HD L+	R/P Head left channel positive
2	GND A	R/P Head return ground
3	B R/P HD R+	R/P Head right channel positive
4	ERASE HEAD	Erase Head
5	GND A	Erase Head ground

CONNECTOR 1720 — DECK B HEADS CONNECTON ***(For Dolby B NR version only)***

1	B R/P HD L+	R/P Head left channel positive
2	B R/P HD L-	R/P Head left channel negative
3	B R/P HD R+	R/P Head right channel positive
4	B R/P HD R-	R/P Head right channel negative
5	ERASE HEAD	Erase Head
6	GND A	Erase Head ground

CONNECTOR 1730 — DECK A HEAD CONNECTIONS ***(For Double Deck versions only)***

1	A PB HD L+	Pb Head left channel positive
2	GND A	Pb Head return ground shield
3	A PB HD R+	Pb Head right channel positive

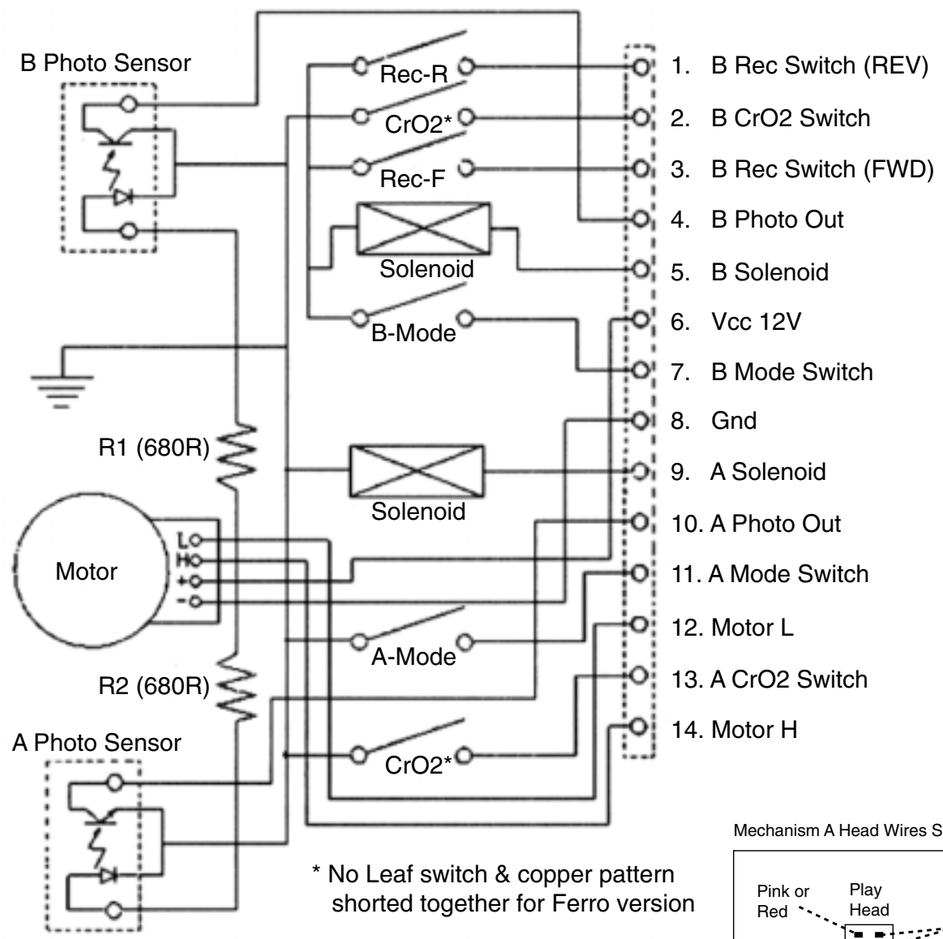
CONNECTOR 1740 — DECK A & B CONTROL INTERFACE ***(For Dolby B NR version only)***

1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply for deck B	
6	Vcc	Deck / Motor supply	
7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	SOL A	Solenoid supply for deck A	
10	PHOTO A	Photo sensor output (tape movement indication)	
11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
12	L	L pin for motor	
13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
14	H	H pin for motor	

CONNECTOR 1770 — DECK A & B CONTROL INTERFACE ***(For Non-Dolby version only)***

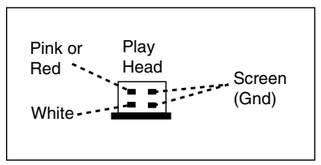
1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
4	PHOTO B	Photo sensor output (tape movement indication)	
5	SOL B	Solenoid supply for deck B	
6	Vcc	Deck / Motor supply	
7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
8	GND M	Deck / Motor ground	
9	SOL A	Solenoid supply for deck A	
10	PHOTO A	Photo sensor output (tape movement indication)	
11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
12	L	L pin for motor	
13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
14	H	H pin for motor	

TAPE MECHANISM ELECTRONICS

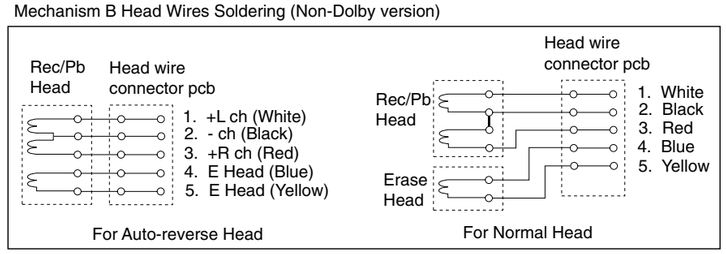


* No Leaf switch & copper pattern shorted together for Ferro version

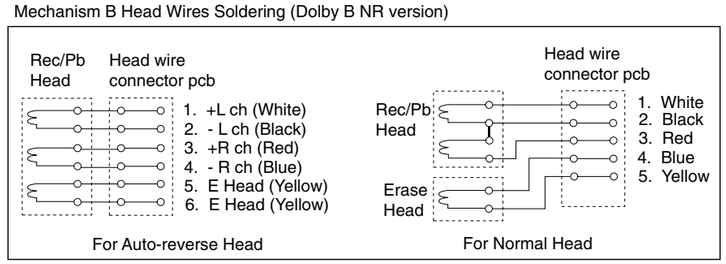
Mechanism A Head Wires Soldering



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)



TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
NORMAL SPEED	SBC420 3150Hz	PLAY B	◇1 or ◇2 LEFT RIGHT	frequency counter	3620	3150Hz +/- 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 3150Hz	PLAY	◇1 or ◇2 LEFT RIGHT	W&F-meter	check	<0.4 % DIN
ADJUST AZIMUTH						
DECK A & B	SBC420 10kHz	PLAY FWD	◇1 or ◇2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	
CHECK PLAYBACK FREQUENCY RESPONSE						
DECK A & B	SBC420	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	check	limits see fig.1
ADJUST BIAS CURRENT						
DECK B	SBC419A^	RECORD	◇5 or ◇6 LEFT RIGHT	mV-meter	3773	995mV
	SBC420				check	750mV +/- 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via ◇3 or ◇4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	◇1 or ◇2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via ◇3 or ◇4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	◇1 or ◇2 LEFT RIGHT	THD-meter	check	<3% *

SBC419A^ : 4822 397 30069
SBC420 : 4822 397 30071

\# For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-meaure
^ Not applicable for Ferro version

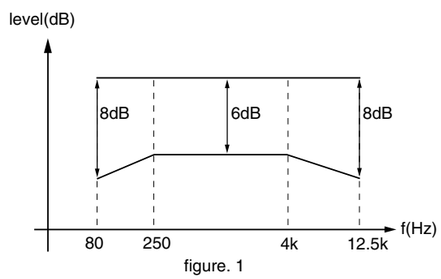


figure. 1

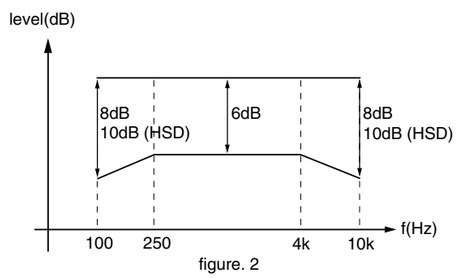
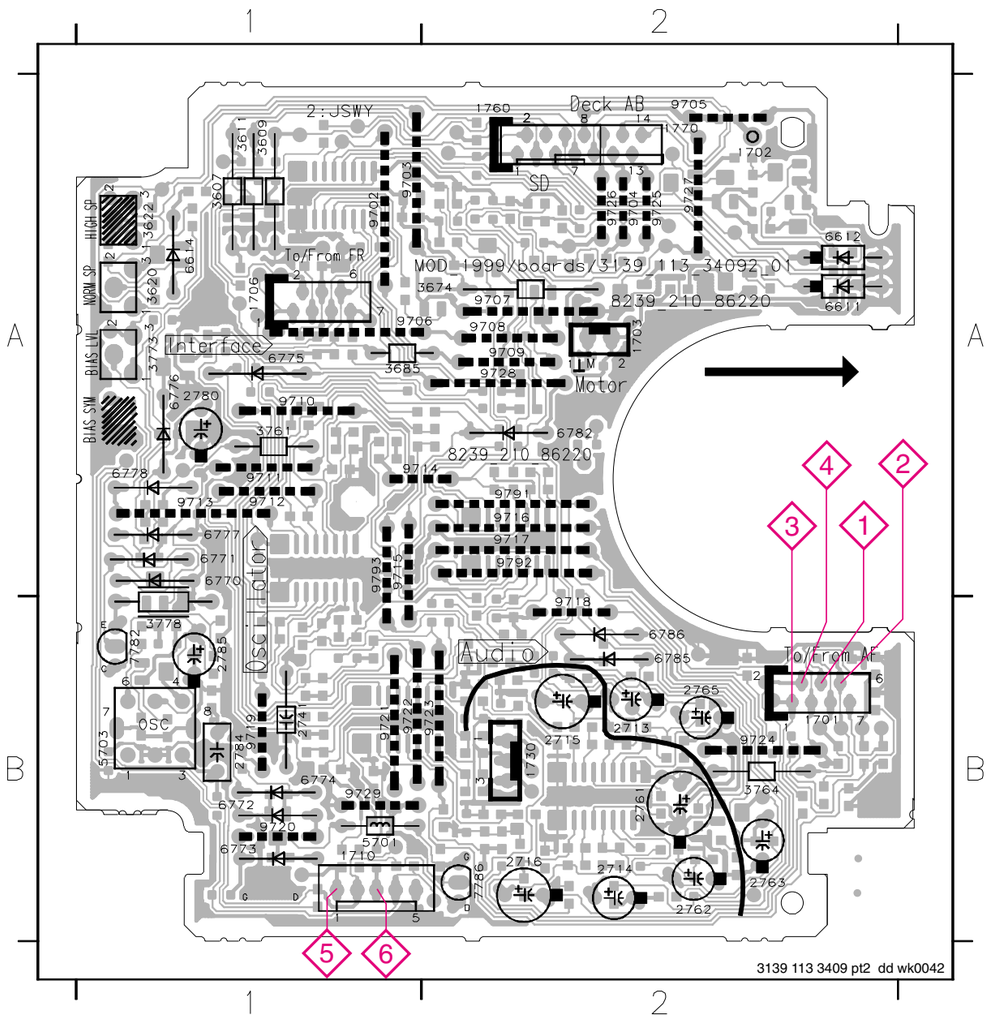


figure. 2

COMPONENT LAYOUT

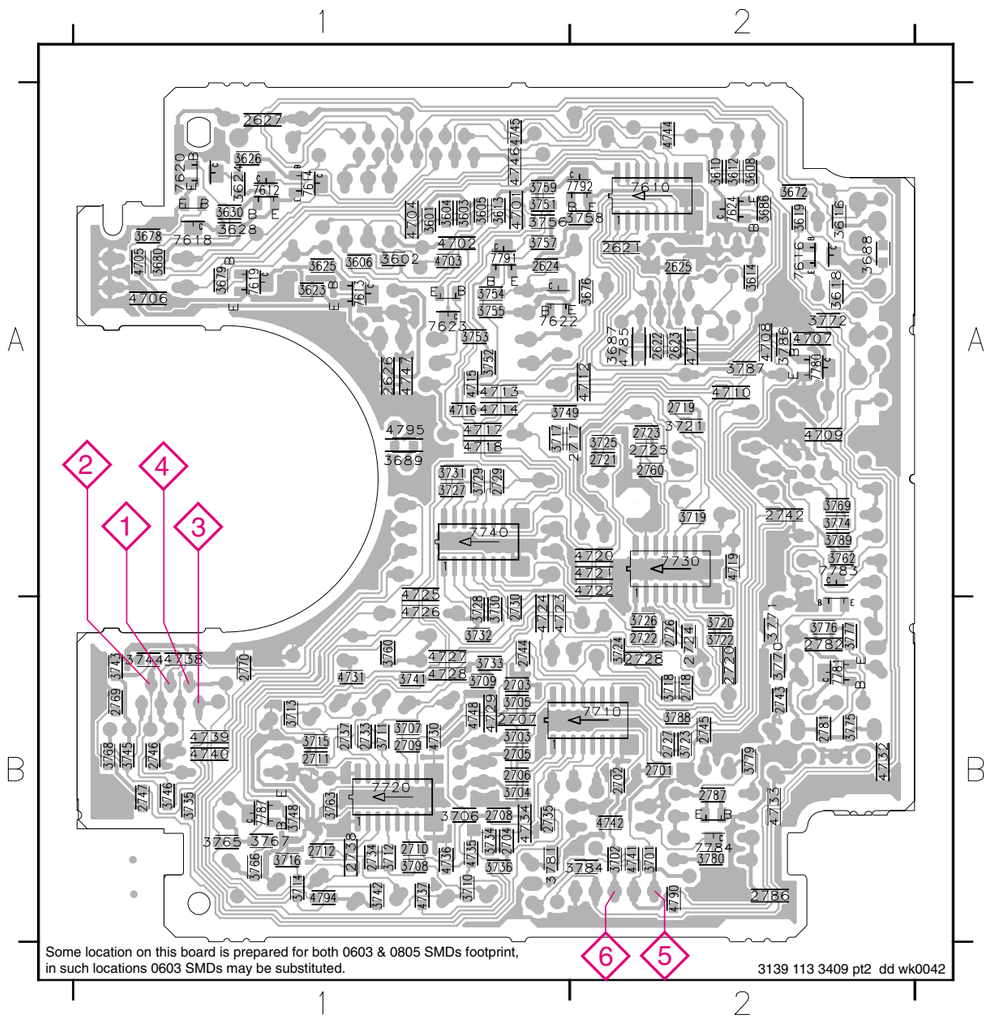
1701 B2	2714 B2	2784 B1	3761 A1	6770 A1	6782 A2	9706 A1	9715 A1	9724 B2
1702 A2	2715 B2	2785 B1	3764 B2	6771 A1	6785 B2	9707 A2	9716 A2	9725 A2
1703 A2	2716 B2	3607 A1	3773 A1	6772 B1	6786 B2	9708 A2	9717 A2	9726 A2
1706 A1	2741 B1	3609 A1	3778 B1	6773 B1	7782 B1	9709 A2	9718 B2	9727 A2
1710 B1	2761 B2	3611 A1	5701 B1	6774 B1	7786 B2	9710 A1	9719 B1	9728 A2
1730 B2	2762 B2	3620 A1	5703 B1	6775 A1	9702 A1	9711 A1	9720 B1	9729 B1
1760 A2	2763 B2	3622 A1	6611 A2	6776 A1	9703 A1	9712 A1	9721 B1	9791 A2
1770 A2	2765 B2	3674 A2	6612 A2	6777 A1	9704 A2	9713 A1	9722 B1	9792 A2
2713 B2	2780 A1	3685 A1	6614 A1	6778 A1	9705 A2	9714 A1	9723 B2	9793 A1



3139 113 3409 pt2 dd wk0042

CHIP LAYOUT

2621 A2	2724 B2	3602 A1	3688 A2	3725 A2	3757 A1	4701 A1	4727 B1	7612 A1
2622 A2	2725 A2	3603 A1	3689 A1	3726 B2	3758 A2	4702 A1	4728 B1	7613 A1
2623 A2	2726 B2	3604 A1	3701 B2	3727 A1	3759 A1	4703 A1	4729 B1	7614 A1
2624 A1	2727 B2	3605 A1	3702 B2	3728 B1	3760 B1	4704 A1	4730 B1	7616 A2
2625 A2	2728 B2	3606 A1	3703 B1	3729 A1	3762 A2	4705 A1	4731 B1	7618 A1
2626 A1	2729 A1	3608 A2	3704 B1	3730 B1	3763 B1	4706 A1	4732 B2	7619 A1
2627 A1	2730 B1	3610 A2	3705 B1	3731 A1	3765 B1	4707 A2	4733 B2	7620 A1
2701 B2	2733 B1	3612 A2	3706 B1	3732 B1	3766 B1	4708 A2	4734 B1	7622 A1
2702 B2	2734 B1	3613 A1	3707 B1	3733 B1	3767 B1	4709 A2	4735 B1	7623 A1
2703 B1	2735 B1	3614 A2	3708 B1	3734 B1	3768 B1	4710 A2	4736 B1	7624 A2
2704 B1	2737 B1	3616 A2	3709 B1	3735 B1	3769 A2	4711 A2	4737 B1	7710 B2
2705 B1	2738 B1	3618 A2	3710 B1	3736 B1	3770 B2	4712 A2	4738 B1	7720 B1
2706 B1	2742 A2	3619 A2	3711 B1	3741 B1	3771 B2	4713 A1	4739 B1	7730 A2
2707 B1	2743 B2	3623 A1	3712 B1	3742 B1	3772 A2	4714 A1	4740 B1	7740 A1
2708 B1	2744 B1	3624 A1	3713 B1	3743 B1	3774 A2	4715 A1	4741 B2	7780 A2
2709 B1	2745 B2	3625 A1	3714 B1	3744 B1	3775 B2	4716 A1	4742 B2	7781 B2
2710 B1	2746 B1	3626 A1	3715 B1	3745 B1	3776 B2	4717 A1	4744 A2	7783 A2
2711 B1	2747 B1	3628 A1	3716 B1	3746 B1	3777 B2	4718 A1	4745 A1	7784 B2
2712 B1	2760 A2	3630 A1	3717 A1	3748 B1	3779 B2	4719 A2	4746 A1	7787 B1
2717 A2	2769 B1	3672 A2	3718 B2	3749 A1	3780 B2	4720 A2	4747 A1	7791 A1
2718 B2	2770 B1	3676 A2	3719 A2	3751 A1	3781 B1	4721 A2	4748 B1	7792 A2
2719 A2	2781 B2	3678 A1	3720 B2	3752 A1	3784 B2	4722 A2	4785 A2	
2720 B2	2782 B2	3679 A1	3721 A2	3753 A1	3786 A2	4723 B1	4790 B2	
2721 A2	2786 B2	3680 A1	3722 B2	3754 A1	3787 A2	4724 B1	4794 B1	
2722 B2	2787 B2	3686 A2	3723 B2	3755 A1	3788 B2	4725 A1	4795 A1	
2723 A2	3601 A1	3687 A2	3724 B2	3756 A1	3789 A2	4726 B1	7610 A2	



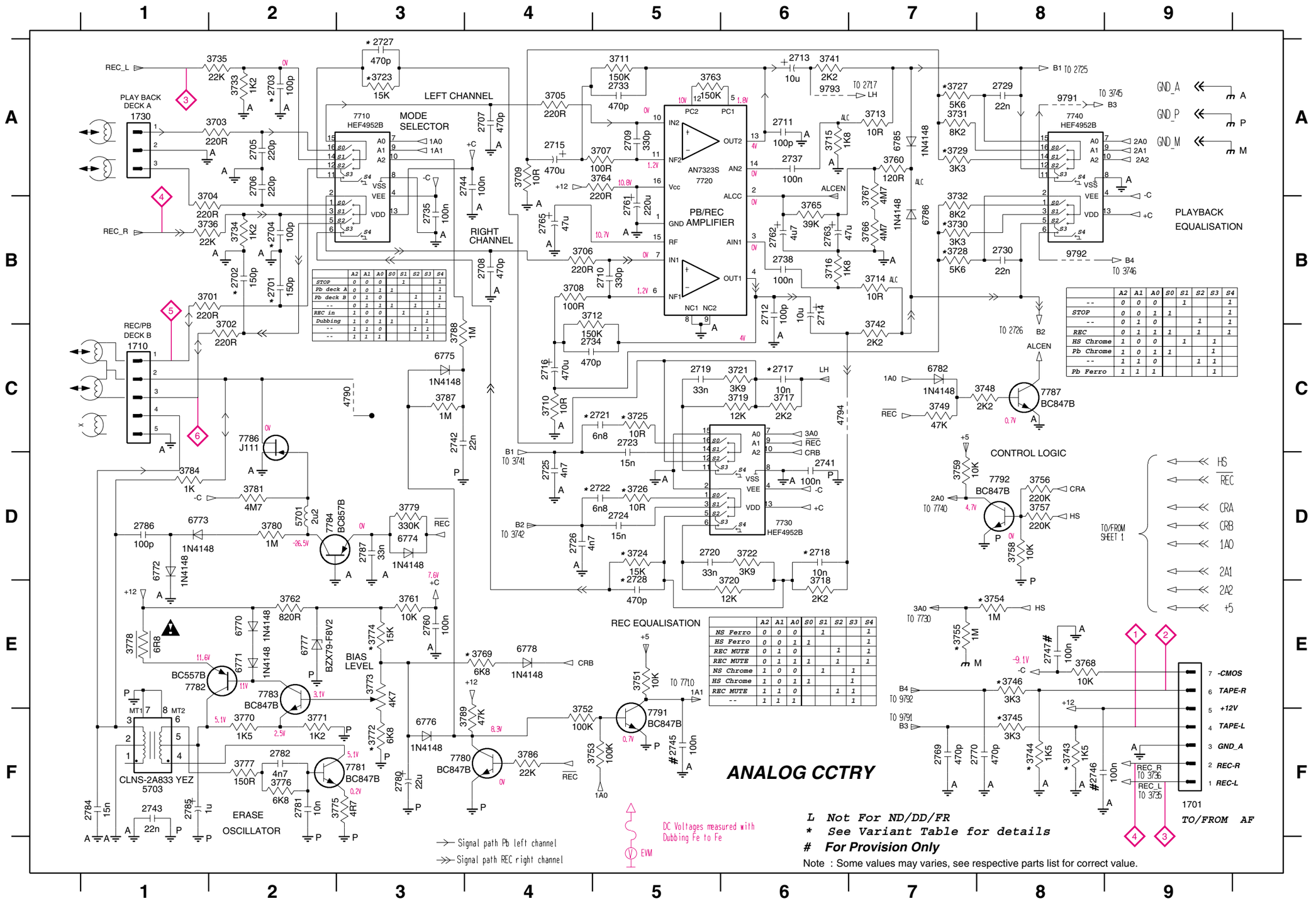
Some location on this board is prepared for both 0603 & 0805 SMDs footprint, in such locations 0603 SMDs may be substituted.

3139 113 3409 pt2 dd wk0042

9-7

ANALOG CIRCUIT

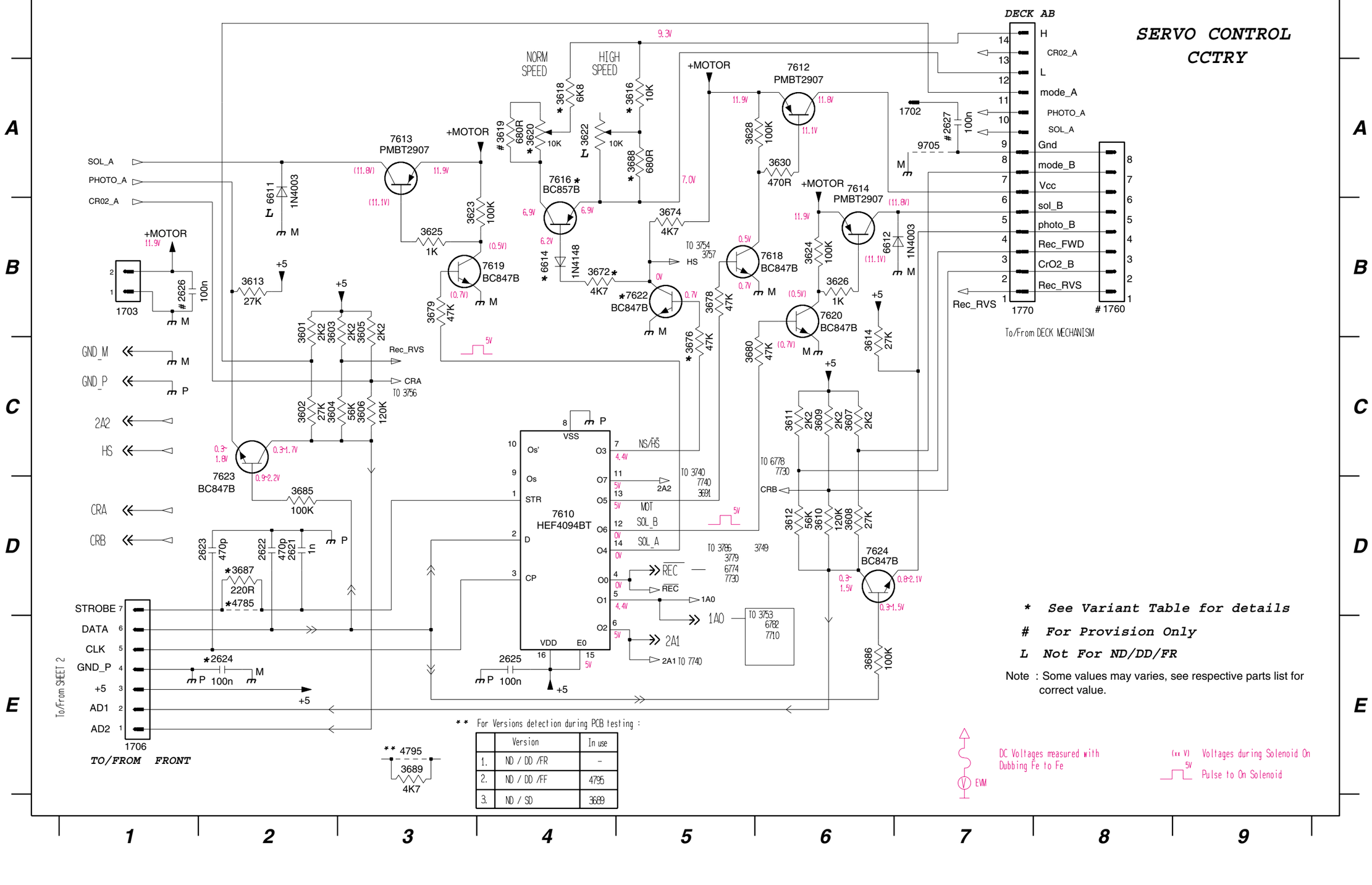
1701 F9	2705 A2	2712 B6	2719 C5	2726 D4	2735 B3	2745 F5	2765 B4	2785 F1	3705 A4	3712 B4	3719 C6	3726 D5	3733 A2	3744 F8	3753 F5	3760 A7	3767 A7	3774 E3	3781 D2	4794 C6	6774 D3	6786 B7	7782 E1	9791 A8
1710 C1	2706 A2	2713 A6	2720 D5	2727 A3	2737 A6	2746 F8	2769 F7	2786 D1	3706 B4	3713 A7	3720 E6	3727 A7	3734 B2	3745 F8	3754 E8	3761 E3	3768 E8	3775 F3	3784 D1	5701 D2	6775 C3	7710 A3	7783 E2	9792 B8
1730 A1	2707 A4	2714 B6	2721 C5	2728 E5	2738 B6	2747 E8	2770 F8	2787 D3	3707 A5	3714 B7	3721 C6	3728 B7	3735 A2	3746 E8	3755 E7	3762 E2	3769 E4	3776 F2	3786 F4	5703 F1	6776 F3	7720 A5	7784 D2	9793 A6
2701 B2	2708 B4	2715 A4	2722 D5	2729 A8	2741 D6	2760 E3	2780 F3	3701 B1	3708 B4	3715 A6	3722 D6	3729 A7	3736 B1	3748 C8	3756 D8	3763 A5	3770 F2	3777 F2	3787 C3	6770 E2	6777 E2	7730 D6	7786 C2	
2702 B2	2709 A5	2716 C4	2723 C5	2730 B8	2742 C3	2761 B5	2781 F2	3702 C2	3709 A4	3716 B6	3723 A3	3730 B7	3741 A6	3749 C7	3757 D8	3764 A5	3771 F2	3778 E1	3788 C3	6771 E2	6778 E4	7740 A8	7787 C8	
2703 A2	2710 B5	2717 C6	2724 D5	2733 A5	2743 F1	2762 B6	2782 F2	3703 A2	3710 C4	3717 C6	3724 D5	3731 A7	3742 C7	3751 E5	3758 D8	3765 B6	3772 F3	3779 D3	3789 F4	6772 D1	6782 C7	7780 F4	7791 F5	
2704 B2	2711 A6	2718 D6	2725 D4	2734 C4	2744 A4	2763 B6	2784 F1	3704 B1	3711 A5	3718 E6	3725 C5	3732 B7	3743 F8	3752 F4	3759 D7	3766 B7	3773 E3	3780 D2	4790 C3	6773 D1	6785 A7	7781 F3	7792 D8	



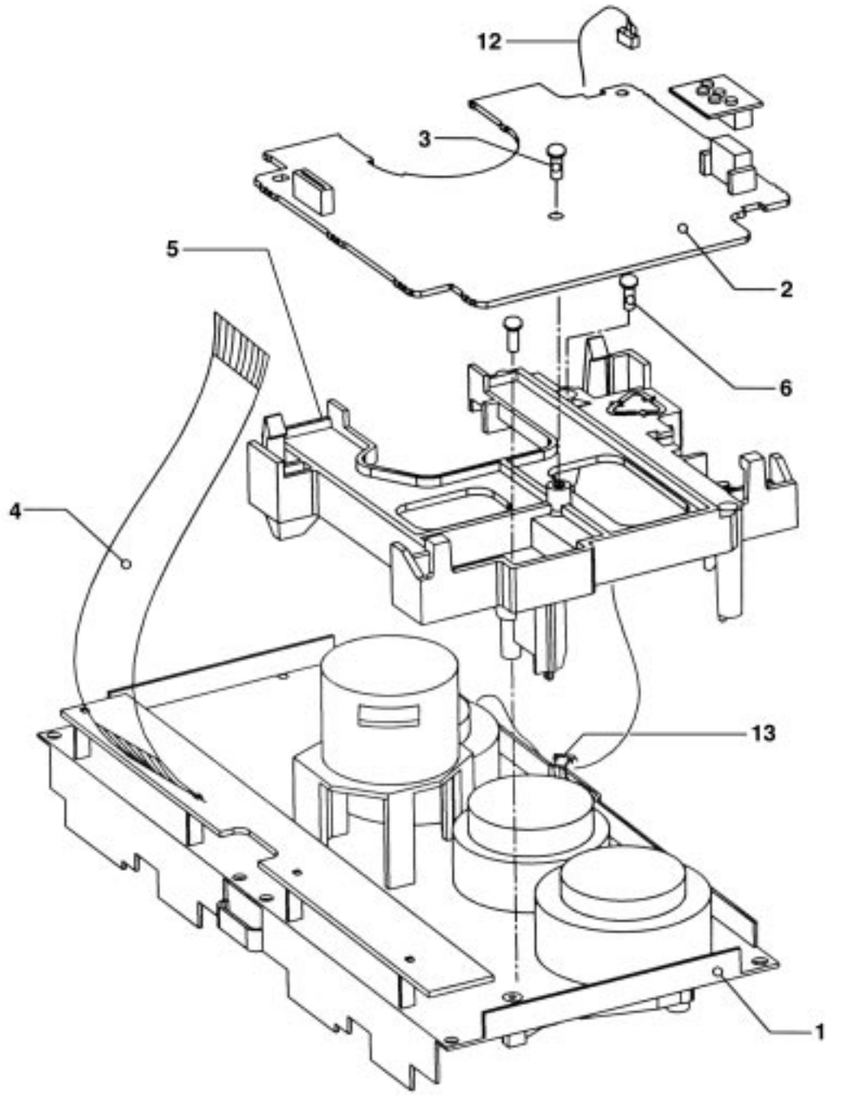
9-8

SERVO CONTROL CIRCUIT

1702 A7 1760 B8 2622 D2 2625 E4 3601 B2 3604 C2 3607 C6 3610 D6 3613 B2 3618 A4 3622 A4 3625 B3 3630 A6 3676 C5 3680 C5 3687 D2 4785 D2 6612 B6 7612 A6 7616 A4 7620 B6 7624 D6
1703 B1 1770 B7 2623 D2 2626 B1 3602 C2 3605 B3 3608 D6 3611 C6 3614 C6 3619 A4 3623 B3 3626 B6 3672 B4 3678 B5 3685 D2 3688 A5 4795 E3 6611 A2 6614 B4 7610 D4 7614 A6 7618 B4 7622 B5 9705 A7
1706 E1 2621 D2 2624 E2 2627 A7 3603 B2 3606 C3 3609 C6 3612 D6 3616 A5 3620 A4 3624 B6 3628 A5 3674 B5 3679 B3 3686 E6 3689 E3 6611 A2 7610 D4 7613 A6 7619 B4 7623 D2



	Version	In use
1.	ND / DD /FR	-
2.	ND / DD /FF	4795
3.	ND / SD	3689



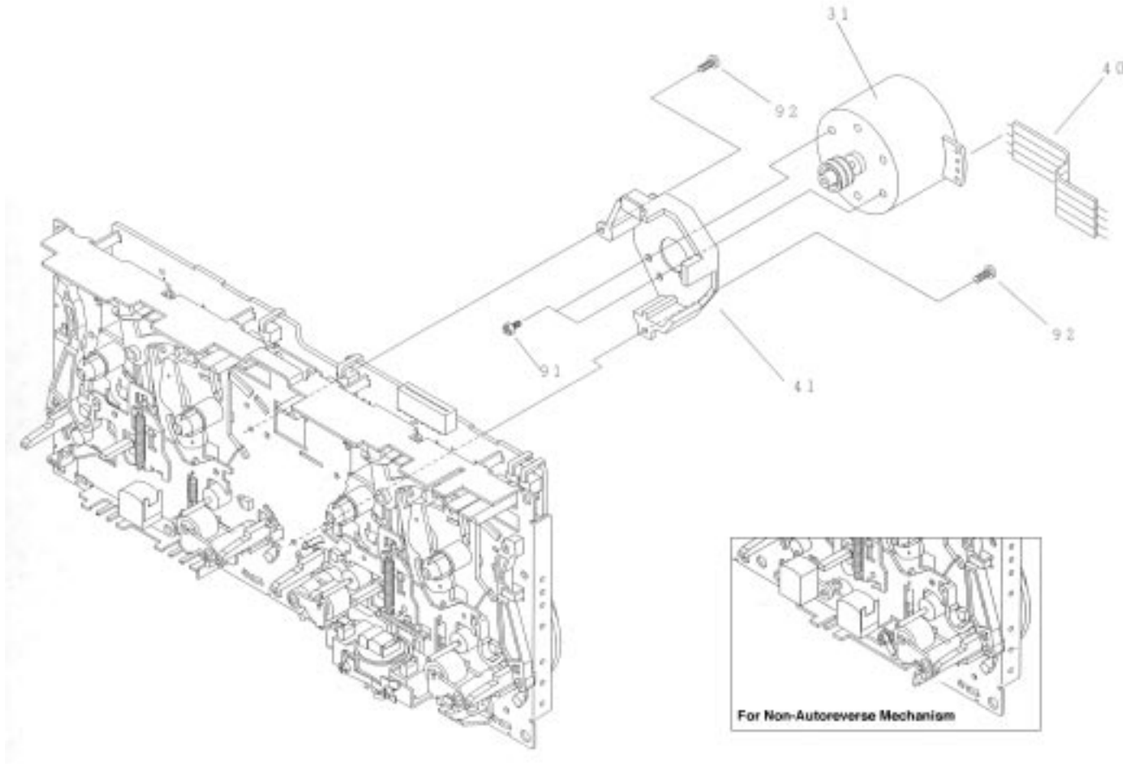
3139 118 77070 (Incl. ...77080) dd wk926

TAPE MODULE EXPLODED VIEW

1	3139 118 77130	Autoreverse Mech. CWE44FR01
1	3139 118 77140	Non-Autoreverse Mech. CWE44FF02 Chrome/Ferro
1	3139 118 77950	Non-Autoreverse Mech. CWE44FF05 Ferro
3	-	Screw D3 x 10
6	-	Screw M2 x 16
7	3139 110 34080	Flex Cable 14 pin 7,5 cm

Note: Only the parts mentioned in this list are normal service spare parts.

9-9



TAPE MECHANISM - MOTOR EXPLODED VIEW

31	4822 361 11055	Motor Assembly
91	-	Screw M2,6 x 5
92	-	Screw M2 x 5

Note: Only the parts mentioned in this list are normal service spare parts.

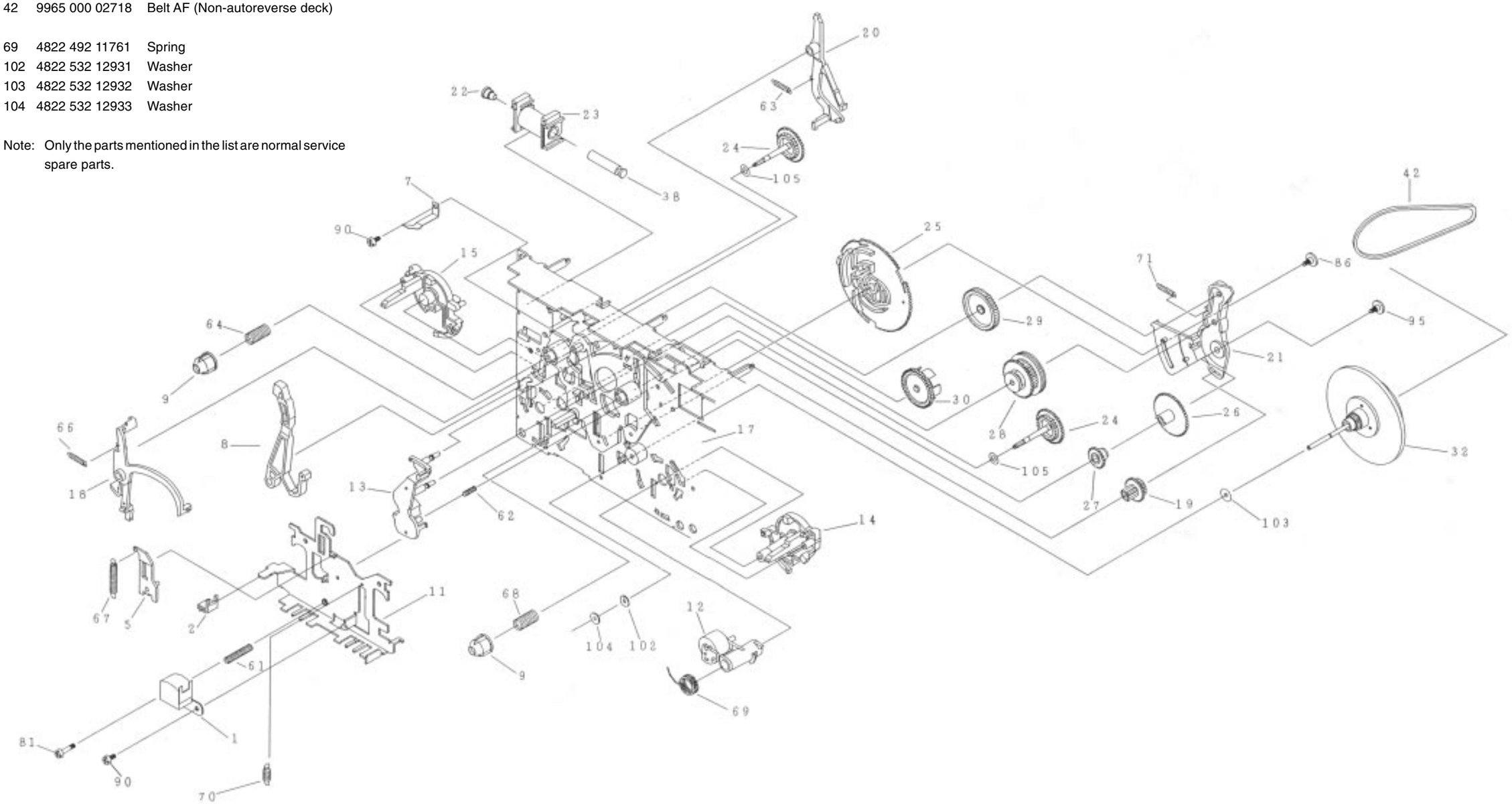
9-10

TAPE MECHANISM A - PLAY

MECHANICAL PARTS - PLAY MECHANISM

1	9965 000 02313	Play Head (Non-Autoreverse deck)
1	9965 000 02321	Play Head (Autoreverse deck)
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
42	9965 000 02315	Belt AF (Autoreverse deck)
42	9965 000 02718	Belt AF (Non-autoreverse deck)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in the list are normal service spare parts.



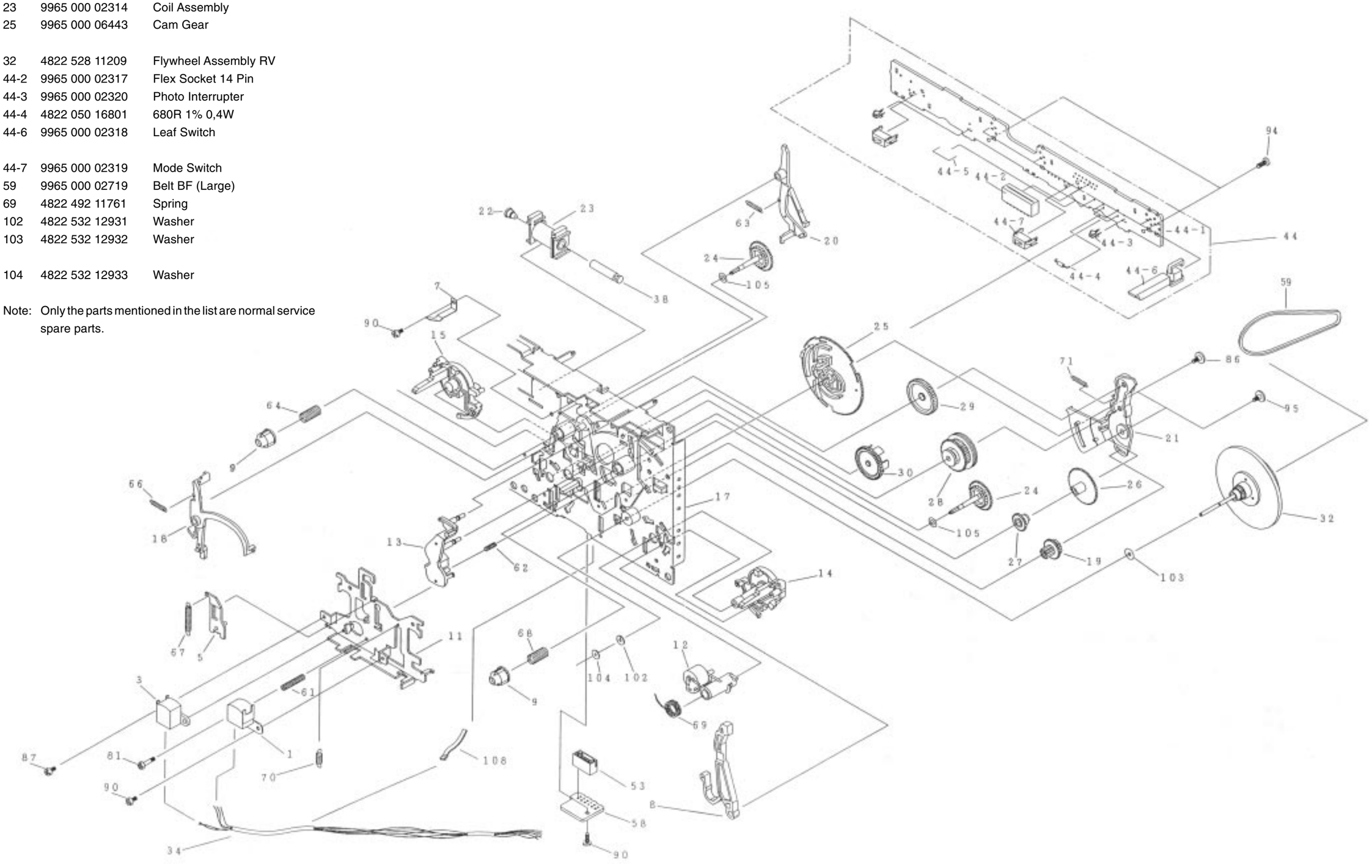
9-11

TAPE MECHANISM B - RECORD/PLAYBACK *(Non-Autoreverse version)*

MECHANICAL PARTS - REC/PB MECHANISM

1	9965 000 02313	Play Head
3	9965 000 02600	Head, Erase
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch
59	9965 000 02719	Belt BF (Large)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in the list are normal service spare parts.



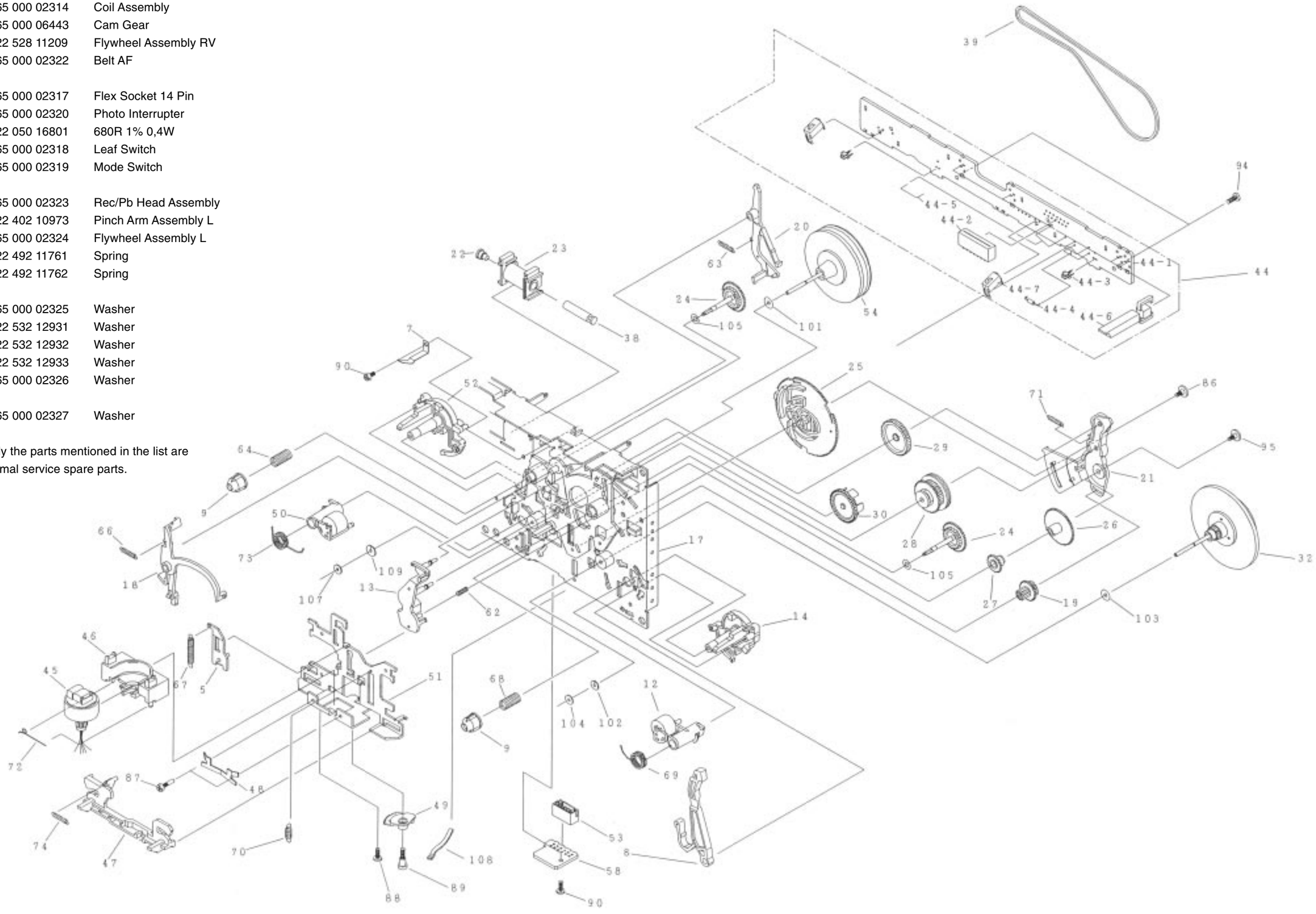
9-12

TAPE MECHANISM B - RECORD/PLAYBACK *(Autoreverse version)*

MECHANICAL PARTS - REC/PB MECHANISM

12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
39	9965 000 02322	Belt AF
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch
45	9965 000 02323	Rec/Pb Head Assembly
50	4822 402 10973	Pinch Arm Assembly L
54	9965 000 02324	Flywheel Assembly L
69	4822 492 11761	Spring
73	4822 492 11762	Spring
101	9965 000 02325	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
107	9965 000 02326	Washer
109	9965 000 02327	Washer

Note: Only the parts mentioned in the list are normal service spare parts.



9-13

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

MISCELLANEOUS

1701	482226710953	Flex Socket 7pin Vert.
1706	482226710953	Flex Socket 7pin Vert.
1770	482226751255	Flex Socket 14pin Vert.

CAPACITORS

2621	532212231647	1nF 10% 63V
2622	532212234099	470pF 10% 63V
2623	532212234099	470pF 10% 63V
2624	482212614585	100nF 10% 50V only for Ferro
2625	482212614585	100nF 10% 50V
2701	532212233538	150pF 2% 63V Autoreverse
2701	482212233216	270pF 5% 63V Non-autoreverse
2702	532212233538	150pF 2% 63V Autoreverse
2702	482212233216	270pF 5% 63V Non-autoreverse
2703	532212232531	100pF 5% 50V Autoreverse
2703	482212233575	220pF 5% 63V Non-autoreverse
2704	532212232531	100pF 5% 50V Autoreverse
2704	482212233575	220pF 5% 63V Non-autoreverse
2705	482212233575	220pF 5% 63V
2706	482212233575	220pF 5% 63V
2707	532212234099	470pF 10% 63V
2708	532212234099	470pF 10% 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% 50V
2712	532212232531	100pF 5% 50V
2713	482212440248	10µF 20% 63V
2714	482212440248	10µF 20% 63V
2715	482212480195	470µF 20% 10V
2716	482212480195	470µF 20% 10V
2717	482212233177	10nF 20% 50V Autoreverse
2717	482212613188	15nF 5% 63V Non-autoreverse
2718	482212233177	10nF 20% 50V Autoreverse
2718	482212613188	15nF 5% 63V Non-autoreverse
2719	482212612105	33nF 5% 50V
2720	482212612105	33nF 5% 50V
2721	532212231866	6,8nF 10% 63V not for Ferro
2722	532212231866	6,8nF 10% 63V not for Ferro
2723	482212613188	15nF 5% 63V
2724	482212613188	15nF 5% 63V
2725	532212610223	4,7nF 10% 63V
2726	532212610223	4,7nF 10% 63V
2727	532212234099	470pF 10% 63V Autoreverse
2727	532212231647	1nF 10% 63V Non-autoreverse
2728	532212234099	470pF 10% 63V Autoreverse
2728	532212231647	1nF 10% 63V Non-autoreverse
2729	532212232654	22nF 10% 63V
2730	532212232654	22nF 10% 63V
2733	532212234099	470pF 10% 63V
2734	532212234099	470pF 10% 63V
2735	482212614585	100nF 10% 50V
2737	482212614585	100nF 10% 50V
2738	482212614585	100nF 10% 50V
2741	482212611585	22nF +80/-20% 25V
2742	532212232654	22nF 10% 63V
2743	532212232654	22nF 10% 63V
2744	482212614585	100nF 10% 50V
2760	482212614585	100nF 10% 50V
2761	482212480144	220µF 20% 25V
2762	482212440769	4,7µF 20% 100V
2763	482212440433	47µF 20% 25V
2765	482212440433	47µF 20% 25V
2769	532212234099	470pF 10% 63V
2770	532212234099	470pF 10% 63V
2780	482212481151	22µF 20% 50V
2781	482212233177	10nF 20% 50V
2782	532212610223	4,7nF 10% 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1µF 20% 63V
2786	532212232531	100pF 5% 50V
2787	482212612105	33nF 5% 50V

RESISTORS

3601	482211711449	2k2 1% 0,1W
3602	482205120273	27k 5% 0,1W
3603	482211711449	2k2 1% 0,1W
3604	482211711148	56k 1% 0,1W
3605	482211711449	2k2 1% 0,1W
3606	482205120124	120k 5% 0,1W
3607	482211652256	2k2 5% 0,5W
3608	482205120273	27k 5% 0,1W
3609	482211652256	2k2 5% 0,5W
3610	482205120124	120k 5% 0,1W
3611	482211652256	2k2 5% 0,5W
3612	482211711148	56k 1% 0,1W
3613	482205120273	27k 5% 0,1W
3614	482205120273	27k 5% 0,1W
3616	482211710833	10k 1% 0,1W Autoreverse
3616	482205110102	1k 2% 0,25W Non-autoreverse
3618	482211711507	6k8 1% 0,1W Autoreverse
3620	482210011141	Trim. 10k 30% Autoreverse
3622	482210011141	Trim. 10k 30% Non-autoreverse
3623	482211710837	100k 1% 0,1W
3624	482211710837	100k 1% 0,1W
3625	482205110102	1k 2% 0,25W
3626	482205110102	1k 2% 0,25W
3628	482211710837	100k 1% 0,1W
3630	482205120471	470R 5% 0,1W
3672	482205120472	4k7 5% 0,1W Autoreverse
3674	482211652283	4k7 5% 0,5W
3676	482211710834	47k 1% 0,1W Autoreverse
3678	482211710834	47k 1% 0,1W
3679	482211710834	47k 1% 0,1W
3680	482211710834	47k 1% 0,1W
3685	482211652234	100k 5% 0,5W
3686	482211710837	100k 1% 0,1W
3687	482211711503	220R 1% 0,1W not for Ferro
3688	482211710361	680R 1% 0,1W Autoreverse
3701	482211711503	220R 1% 0,1W
3702	482211711503	220R 1% 0,1W
3703	482211711503	220R 1% 0,1W
3704	482211711503	220R 1% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482211711503	220R 1% 0,1W
3707	482205120101	100R 5% 0,1W
3708	482205120101	100R 5% 0,1W
3709	482205120109	10R 5% 0,1W
3710	482205120109	10R 5% 0,1W
3711	482205120154	150k 5% 0,1W
3712	482205120154	150k 5% 0,1W
3713	482205120109	10R 5% 0,1W
3714	482205120109	10R 5% 0,1W
3715	482205120182	1k8 5% 0,1W
3716	482205120182	1k8 5% 0,1W
3717	482211711449	2k2 1% 0,1W
3718	482211711449	2k2 1% 0,1W
3719	482211711383	12k 1% 0,1W
3720	482211711383	12k 1% 0,1W
3721	482205120392	3k9 5% 0,1W
3722	482205120392	3k9 5% 0,1W
3723	482211683933	15k 1% 0,1W Autoreverse
3723	482211710965	18k 1% 0,1W Non-autoreverse
3724	482211683933	15k 1% 0,1W Autoreverse
3724	482211710965	18k 1% 0,1W Non-autoreverse
3725	482205120109	10R 5% 0,1W not for Ferro
3726	482205120109	10R 5% 0,1W not for Ferro
3727	482205120562	5k6 5% 0,1W Autoreverse
3727	482211711507	6k8 1% 0,1W Non-autoreverse
3728	482205120562	5k6 5% 0,1W Autoreverse
3728	482211711507	6k8 1% 0,1W Non-autoreverse
3729	482205120332	3k3 5% 0,1W Autoreverse
3729	482205120472	4k7 5% 0,1W Non-autoreverse
3730	482205120332	3k3 5% 0,1W Autoreverse
3730	482205120472	4k7 5% 0,1W Non-autoreverse
3731	482205120822	8k2 5% 0,1W
3732	482205120822	8k2 5% 0,1W
3733	482205120122	1k2 5% 0,1W
3734	482205120122	1k2 5% 0,1W
3735	482205120223	22k 5% 0,1W
3736	482205120223	22k 5% 0,1W
3741	482211711449	2k2 1% 0,1W
3742	482211711449	2k2 1% 0,1W
3743	482211711139	1k5 1% 0,1W Autoreverse
3743	482211711449	2k2 1% 0,1W Non-autoreverse
3744	482211711139	1k5 1% 0,1W Autoreverse
3744	482211711449	2k2 1% 0,1W Non-autoreverse
3745	482205120332	3k3 5% 0,1W Autoreverse
3745	482205120562	5k6 5% 0,1W Non-autoreverse
3746	482205120332	3k3 5% 0,1W Autoreverse
3746	482205120562	5k6 5% 0,1W Non-autoreverse
3748	482211711449	2k2 1% 0,1W
3749	482211710834	47k 1% 0,1W
3751	482211710833	10k 1% 0,1W
3752	482211710837	100k 1% 0,1W
3753	482211710837	100k 1% 0,1W
3754	482205120105	1M 5% 0,1W Autoreverse
3754	482205120479	47R 5% 0,1W Non-autoreverse
3755	482205120105	1M 5% 0,1W Autoreverse
3755	482205120479	47R 5% 0,1W Non-autoreverse
3756	482211713579	220k 1% 0,1W
3757	482211713579	220k 1% 0,1W
3758	482211710833	10k 1% 0,1W
3759	482211710833	10k 1% 0,1W
3760	482205120121	120R 5% 0,1W
3761	482205021003	10k 1% 0,6W
3762	482211711454	820R 1% 0,1W
3763	482205120154	150k 5% 0,1W
3764	482211683872	220R 5% 0,5W
3765	482205120393	39k 5% 0,1W
3766	482205120475	4M7 5% 0,1W
3767	482205120475	4M7 5% 0,1W
3768	482211710833	10k 1% 0,1W
3769	482211711383	12k 1% 0,1W Autoreverse
3769	482205120822	8k2 5% 0,1W Non-autoreverse
3770	482211711139	1k5 1% 0,1W
3771	482205120122	1k2 5% 0,1W
3772	482211711507	6k8 1% 0,1W Autoreverse
3772	482205120562	5k6 5% 0,1W Non-autoreverse
3773	482210012227	Trimmer 4k7 30% 0,1W
3774	482211683933	15k 1% 0,1W Autoreverse
3774	482205120822	8k2 5% 0,1W Non-autoreverse
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6k8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205210688	⚠ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3784	482205110102	1k 2% 0,25W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805

9-14

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

RESISTORS

4706	482205120008	0R Jumper 0805	
4707	482205120008	0R Jumper 0805	
4708	482205120008	0R Jumper 0805	
4709	482205120008	0R Jumper 0805	
4710	482205120008	0R Jumper 0805	
4711	482205120008	0R Jumper 0805	
4712	482205120008	0R Jumper 0805	
4713	482205120008	0R Jumper 0805	
4714	482205120008	0R Jumper 0805	
4715	482205120008	0R Jumper 0805	
4716	482205120008	0R Jumper 0805	
4717	482205120008	0R Jumper 0805	
4718	482205120008	0R Jumper 0805	
4719	482205120008	0R Jumper 0805	
4720	482205120008	0R Jumper 0805	
4721	482205120008	0R Jumper 0805	
4722	482205120008	0R Jumper 0805	
4723	482205120008	0R Jumper 0805	
4724	482205120008	0R Jumper 0805	
4725	482205120008	0R Jumper 0805	
4726	482205120008	0R Jumper 0805	
4727	482205120008	0R Jumper 0805	
4728	482205120008	0R Jumper 0805	
4729	482205120008	0R Jumper 0805	
4730	482205120008	0R Jumper 0805	
4731	482205120008	0R Jumper 0805	
4732	482205120008	0R Jumper 0805	
4733	482205120008	0R Jumper 0805	
4734	482205120008	0R Jumper 0805	
4735	482205120008	0R Jumper 0805	
4736	482205120008	0R Jumper 0805	
4737	482205120008	0R Jumper 0805	
4738	482205120008	0R Jumper 0805	
4739	482205120008	0R Jumper 0805	
4740	482205120008	0R Jumper 0805	
4741	482205120008	0R Jumper 0805	
4742	482205120008	0R Jumper 0805	
4744	482205120008	0R Jumper 0805	
4745	482205120008	0R Jumper 0805	
4746	482205120008	0R Jumper 0805	
4748	482205120008	0R Jumper 0805	
4785	482205120008	0R Jumper 0805	only for Ferro
4790	482205120008	0R Jumper 0805	
4794	482205120008	0R Jumper 0805	
4795	482205120008	0R Jumper 0805	

COILS & FILTERS

5701	482215711477	Coil 2,2µH 5%
5703	482215620946	Osc Coil 100kHz

DIODES

6611	482213031878	1N4003G
6612	482213031878	1N4003G
6614	482213030621	1N4148 Autoreverse
6770	482213030621	1N4148
6771	482213030621	1N4148
6772	482213030621	1N4148
6773	482213030621	1N4148
6774	482213030621	1N4148
6775	482213030621	1N4148
6776	482213030621	1N4148
6777	482213034382	BZX79-F8V2
6778	482213030621	1N4148
6782	482213030621	1N4148
6785	482213030621	1N4148
6786	482213030621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	532220911306	HEF4094BT	
7612	482213011201	PMBT2907	
7613	482213011201	PMBT2907	
7614	482213011201	PMBT2907	
7616	482213060373	BC857B	Autoreverse
7618	482213060511	BC847B	
7619	482213060511	BC847B	
7620	482213060511	BC847B	
7622	482213060511	BC847B	Autoreverse
7623	482213060511	BC847B	
7624	482213060511	BC847B	
7710	482220932919	HEF4952BT	
7720	932214000668	AN7323S	
7730	482220932919	HEF4952BT	
7740	482220932919	HEF4952BT	
7780	482213060511	BC847B	
7781	482213042804	BC817-25	
7782	482213044568	BC557B	
7783	482213060511	BC847B	
7784	482213060373	BC857B	
7786	482213063494	J111	
7787	482213060511	BC847B	
7791	482213060511	BC847B	
7792	482213060511	BC847B	

Note: Only the parts mentioned in this list are normal service spare parts.

3CDC-LLC-MCD1

(3 Disc Carousel Changer)

Layout stage .3

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Service hints

CAUTION

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
• SWITCH OFF POWER SUPPLY
• ESD PROTECTION
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip on the flexfoil to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil and connect it to the new drive
5. Position the new CD drive in its studs
6. Remove solder joint from the Laserunit

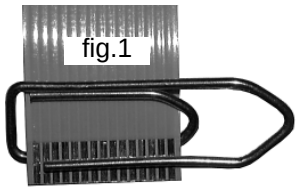
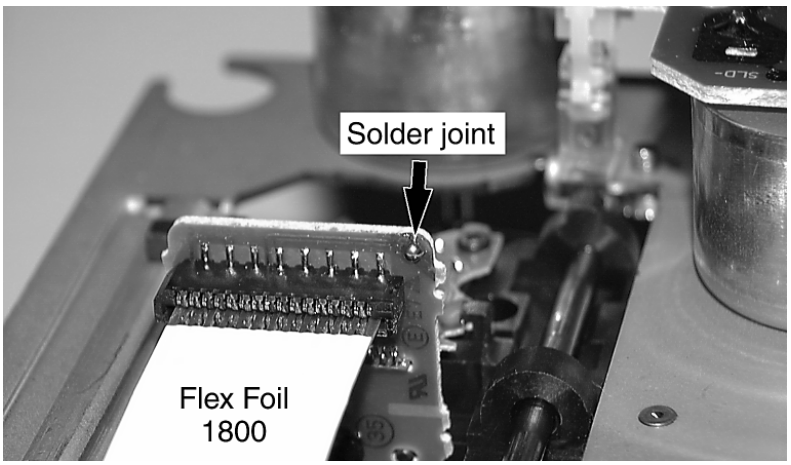


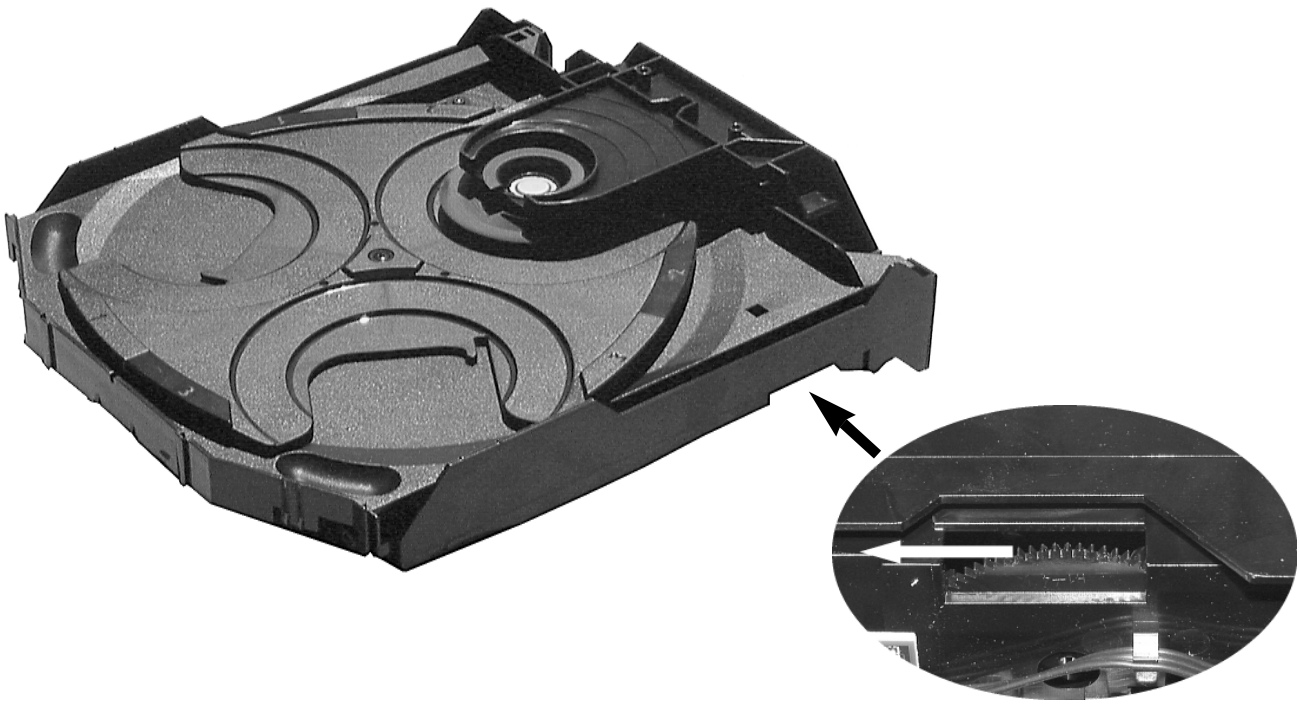
fig.1

Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



Emergency open

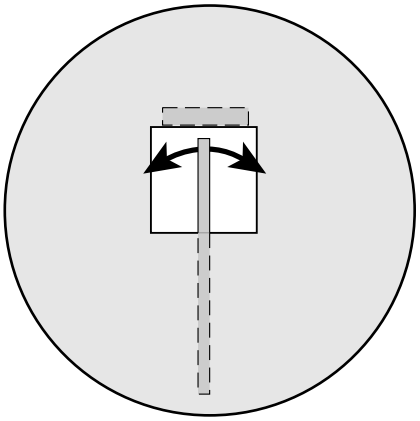
In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



Service hints

Dismantling of Tray

1. Open the tray.
2. Release 2x catch as shown in fig. 2 and Detail A
3. Pull tray out.



Detail A

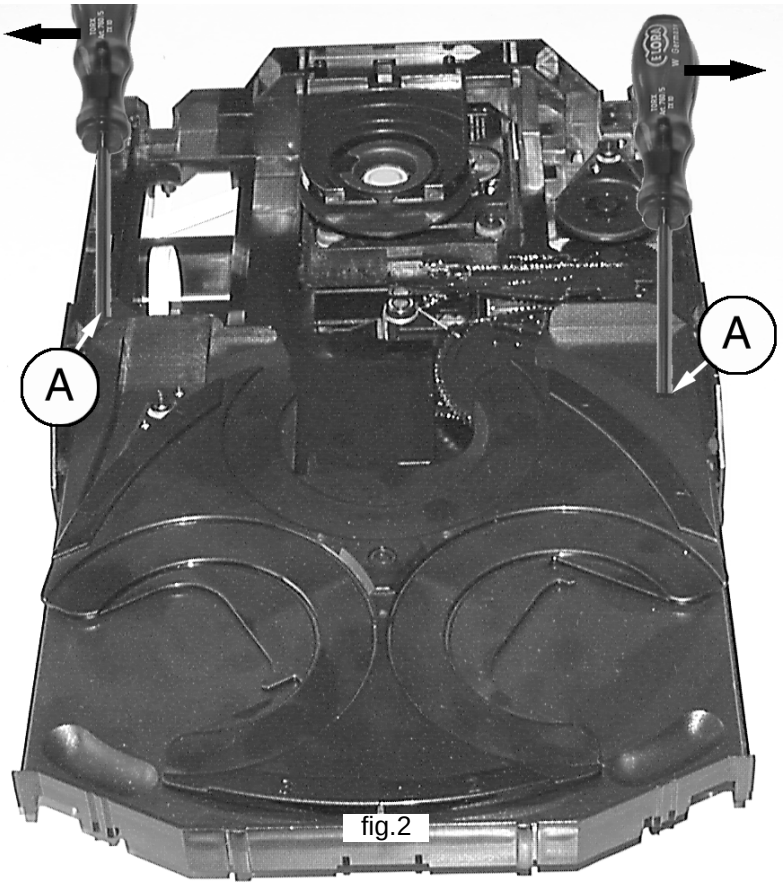
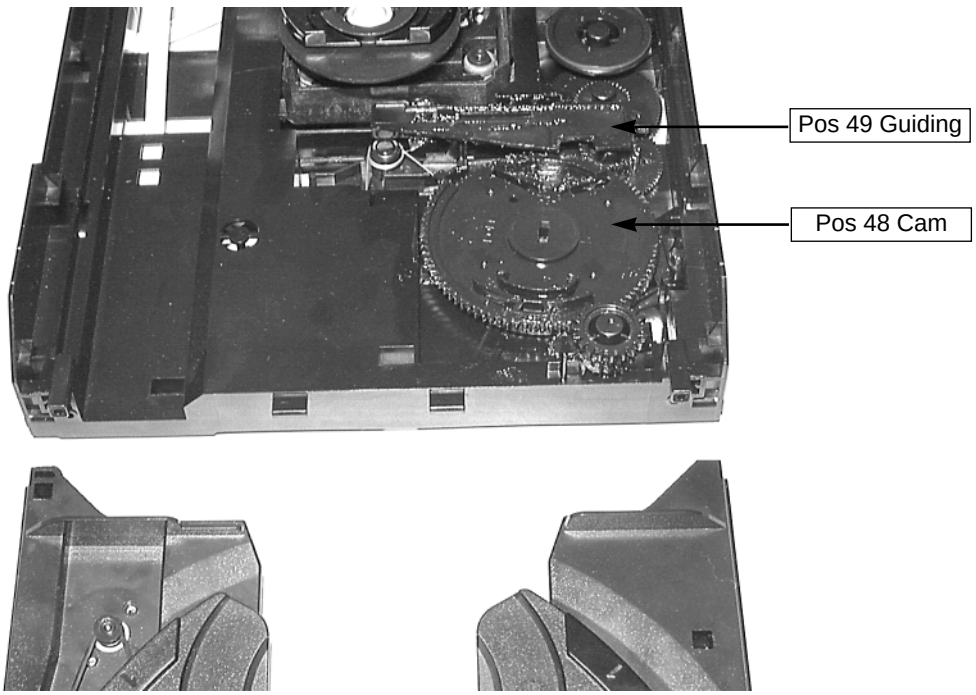


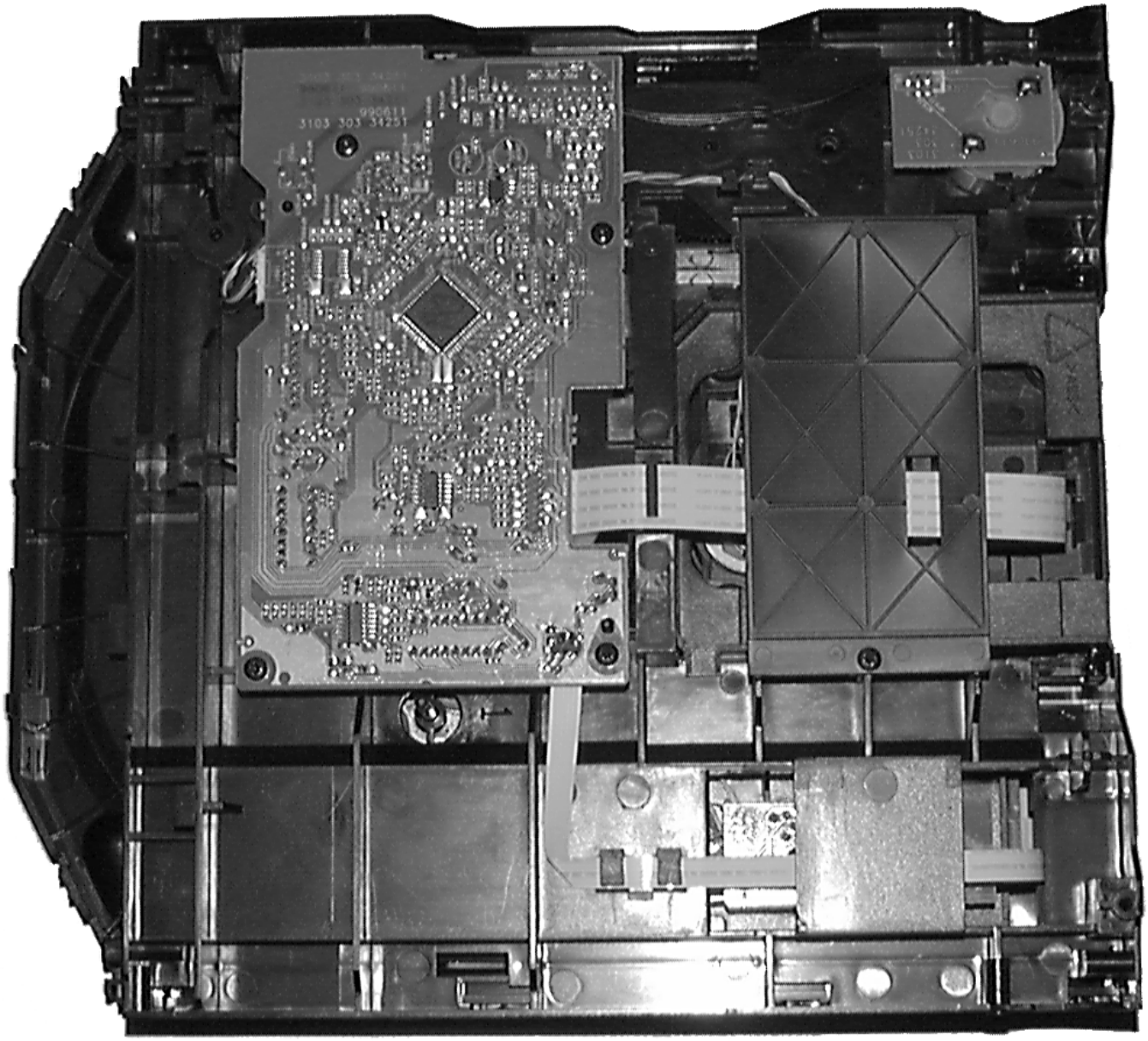
fig.2

Assembling of Tray

1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.

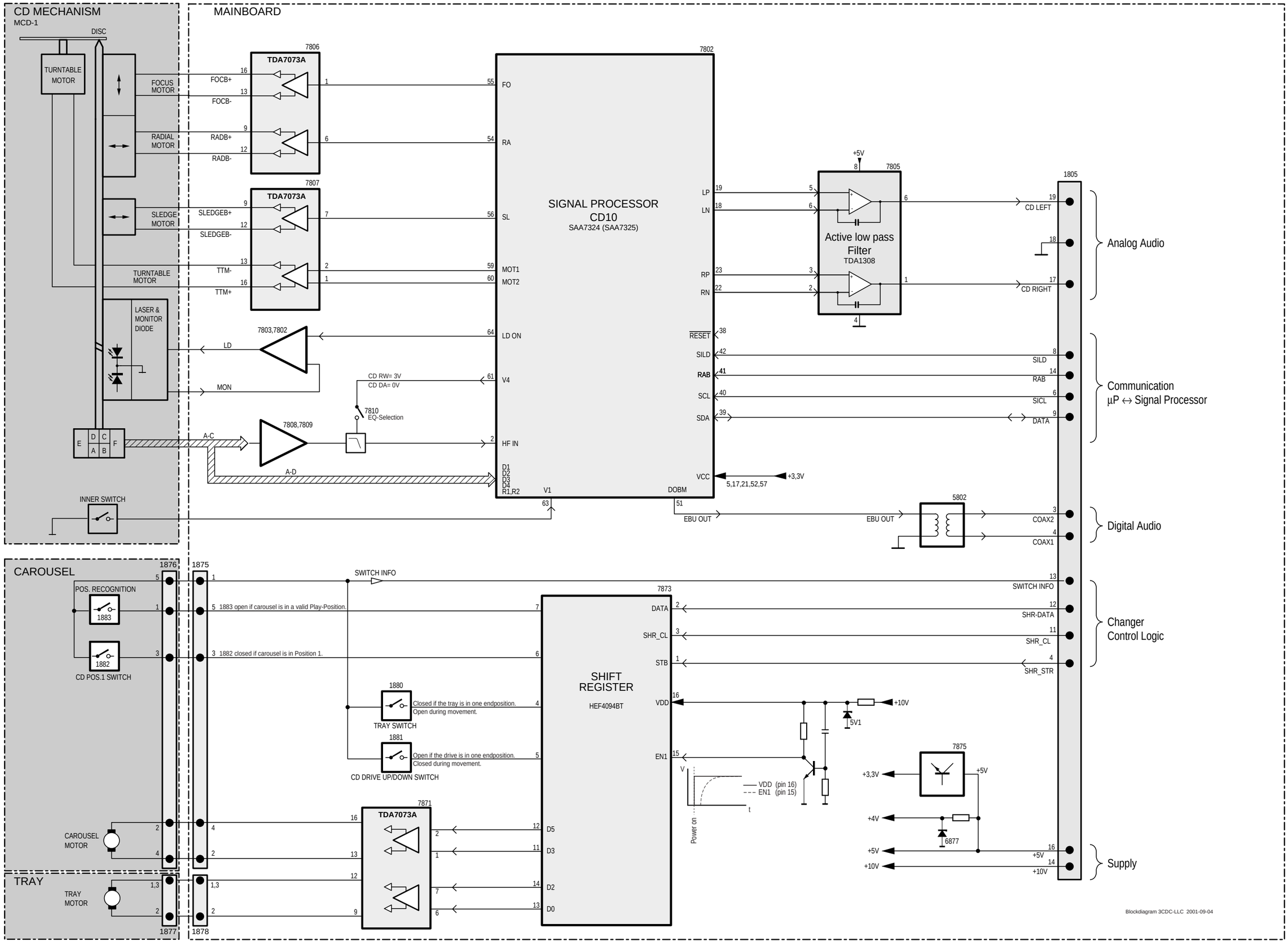


Service Position



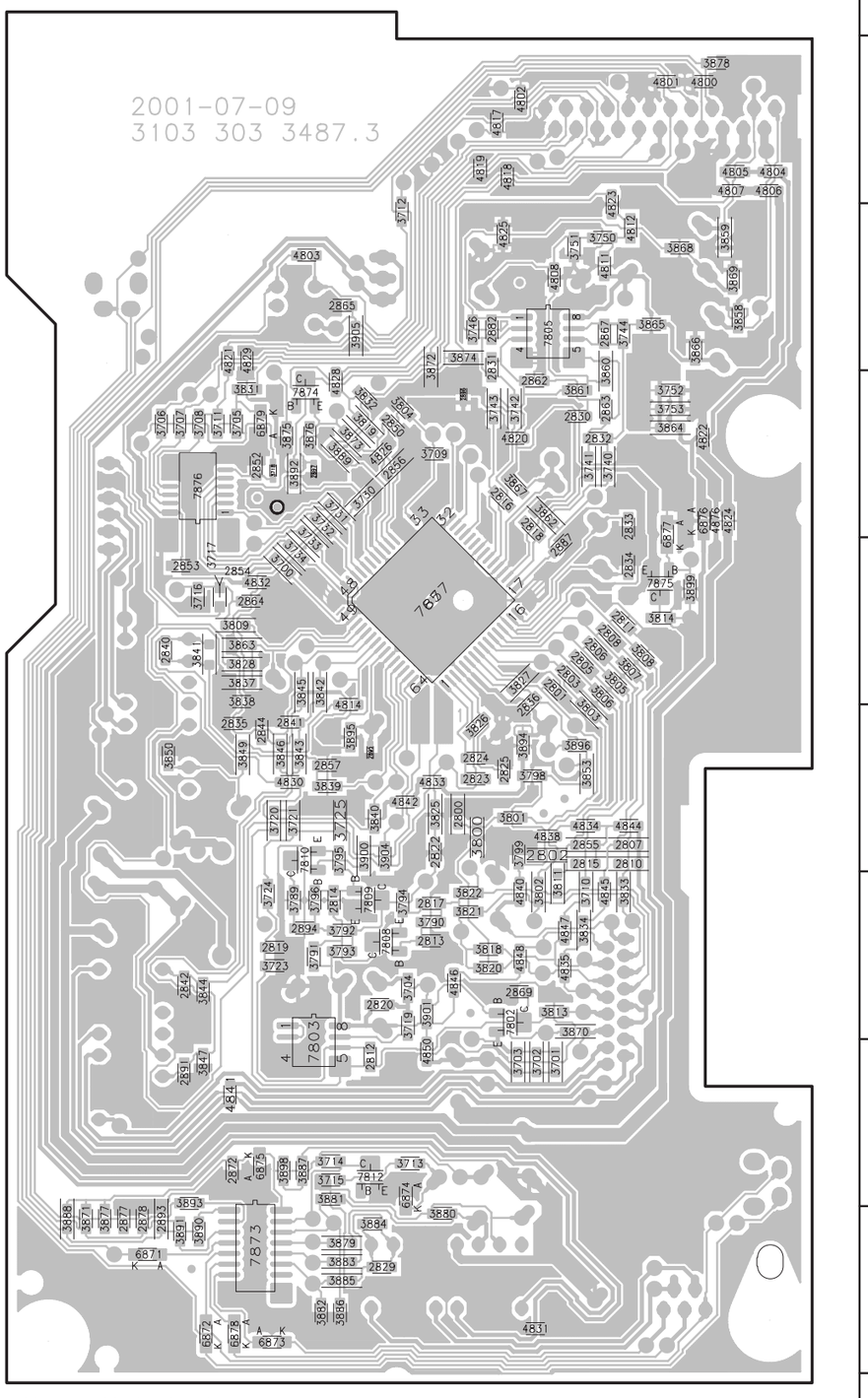
10-5

BLOCK DIAGRAM 3CDC-LLC-MCD1



10-6

3CDC-LLC Copperside view



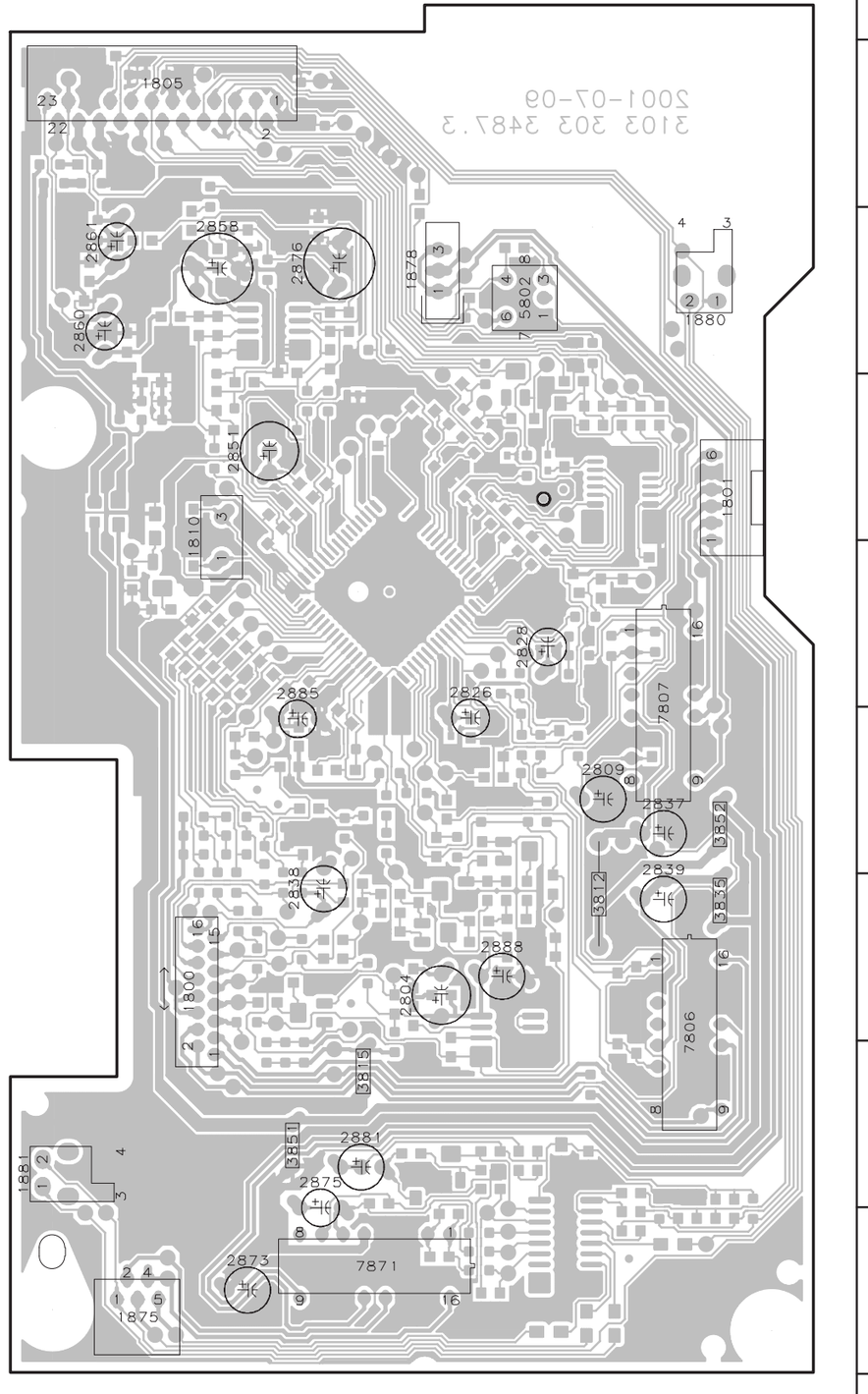
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LIC Layout stage .3 2001-07-25

Mapping

Copperside						Componentside	
2800	E3	3741	C4	3889	C2	1800	F2
2801	D4	3742	C4	3890	H2	1801	C5
2802	E4	3743	C3	3891	H2	1805	A2
2803	D4	3744	B4	3892	C2	1810	C2
2805	D4	3746	B3	3893	G2	1875	H1
2806	D4	3750	B4	3894	E4	1878	B3
2807	E4	3751	B4	3895	E3	1880	B5
2808	D4	3752	C4	3896	E4	1881	G1
2810	E4	3753	C4	3898	G2	2804	F3
2811	D4	3789	F2	3899	D5	2809	E4
2812	G3	3790	F3	3900	E3	2826	D3
2813	F3	3791	F2	3901	F3	2828	D4
2814	F2	3792	F3	3904	E3	2837	E5
2815	E4	3793	F3	3905	B3	2838	F2
2816	C3	3794	F3	4800	A5	2839	E5
2817	F3	3795	E2	4801	A4	2851	C2
2818	C4	3796	F2	4802	A4	2858	B2
2819	F2	3798	E4	4803	B2	2860	B1
2820	F3	3799	E4	4804	A5	2861	B1
2822	E3	3800	E3	4805	A5	2873	H2
2823	E3	3801	E4	4806	A5	2875	G3
2824	E3	3802	F4	4807	A5	2876	B2
2825	E3	3803	D4	4808	B4	2881	G3
2829	H3	3804	C3	4811	B4	2885	D2
2830	C4	3805	D4	4812	B4	2888	F4
2831	B3	3806	D4	4814	D3	3812	F4
2832	C4	3807	D4	4817	A3	3815	G3
2833	C4	3808	D4	4818	A3	3835	F5
2834	D4	3809	D2	4819	A3	3851	G2
2835	E2	3811	F4	4820	C4	3852	E5
2836	D4	3813	F4	4821	B2	5802	B4
2840	D1	3814	D4	4822	C5	7806	F5
2841	E2	3818	F3	4823	A4	7807	D5
2842	F2	3819	C3	4824	C5	7871	H3
2844	E2	3820	F3	4825	B3		
2850	C3	3821	F3	4826	C3		
2852	C2	3822	F3	4828	C2		
2853	D2	3825	E3	4829	B2		
2854	D2	3826	E3	4830	E2		
2855	E4	3827	D4	4831	H4		
2856	C3	3828	D2	4832	D2		
2857	E2	3831	C2	4833	E3		
2862	C4	3832	C3	4834	E4		
2863	C4	3833	F4	4835	F4		
2864	D2	3834	F4	4838	E4		
2865	B3	3837	D2	4840	F4		
2867	B4	3838	D2	4841	G2		
2869	F4	3839	E2	4842	E3		
2872	G2	3840	E3	4844	E4		
2877	H1	3841	D2	4845	F4		
2878	H1	3842	D2	4846	F3		
2882	B3	3843	E2	4847	F4		
2887	C4	3844	F2	4848	F4		
2891	G2	3845	D2	4850	G3		
2893	H1	3846	E2	4876	C5		
2894	F2	3847	G2	6871	H1		
2895	E3	3849	E2	6872	H2		
2896	C3	3850	E1	6873	H2		
2897	C2	3853	E4	6874	G3		
3700	D2	3858	B5	6875	G2		
3701	G4	3859	B5	6876	C5		
3702	G4	3860	B4	6877	C4		
3703	G4	3861	C4	6878	H2		
3704	F3	3862	C4	6879	C2		
3705	C2	3863	D2	7802	F4		
3706	C1	3864	C4	7803	F2		
3707	C2	3865	B4	7805	B4		
3708	C2	3866	B5	7808	F3		
3709	C3	3867	C4	7809	F3		
3710	F4	3868	B5	7810	E2		
3711	C2	3869	B5	7812	G3		
3712	A3	3870	F4	7873	H2		
3713	G3	3871	H1	7874	C2		
3714	G2	3872	B3	7875	D4		
3715	G2	3873	C3	7876	C2		
3716	D2	3874	B3	7877	D3		
3717	D2	3875	C2				
3718	C2	3876	C2				
3719	F3	3877	H1				
3720	E2	3878	A5				
3721	E2	3879	H3				
3723	F2	3880	G3				
3724	F2	3881	G2				
3725	E2	3882	H2				
3730	C3	3883	H3				
3731	C2	3884	H3				
3732	C2	3885	H3				
3733	C2	3886	H2				
3734	D2	3887	G2				
3740	C4	3888	H1				

3CDC-LLC Componentside view

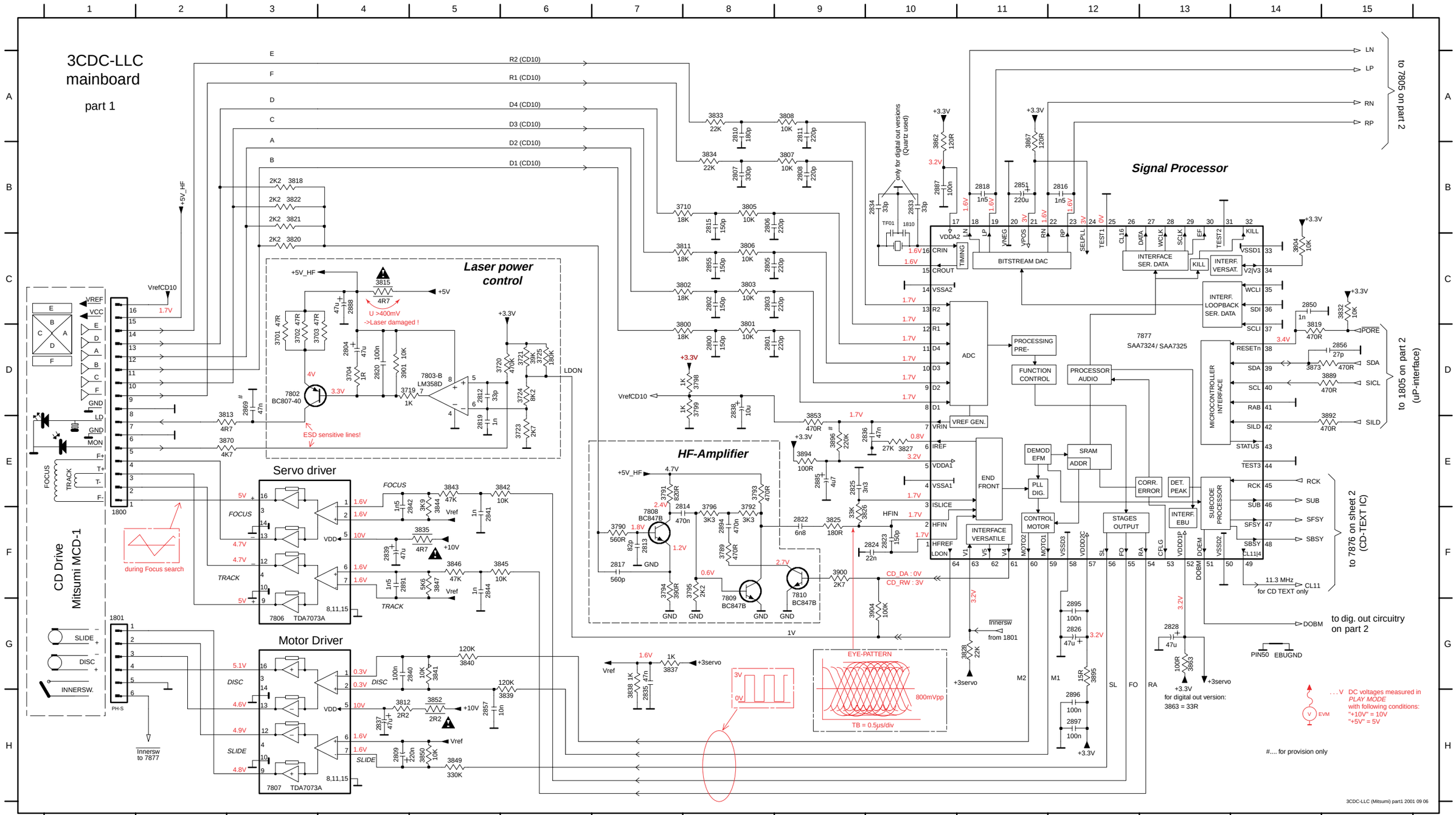


This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LLC Layout stage .3 2001-07-25

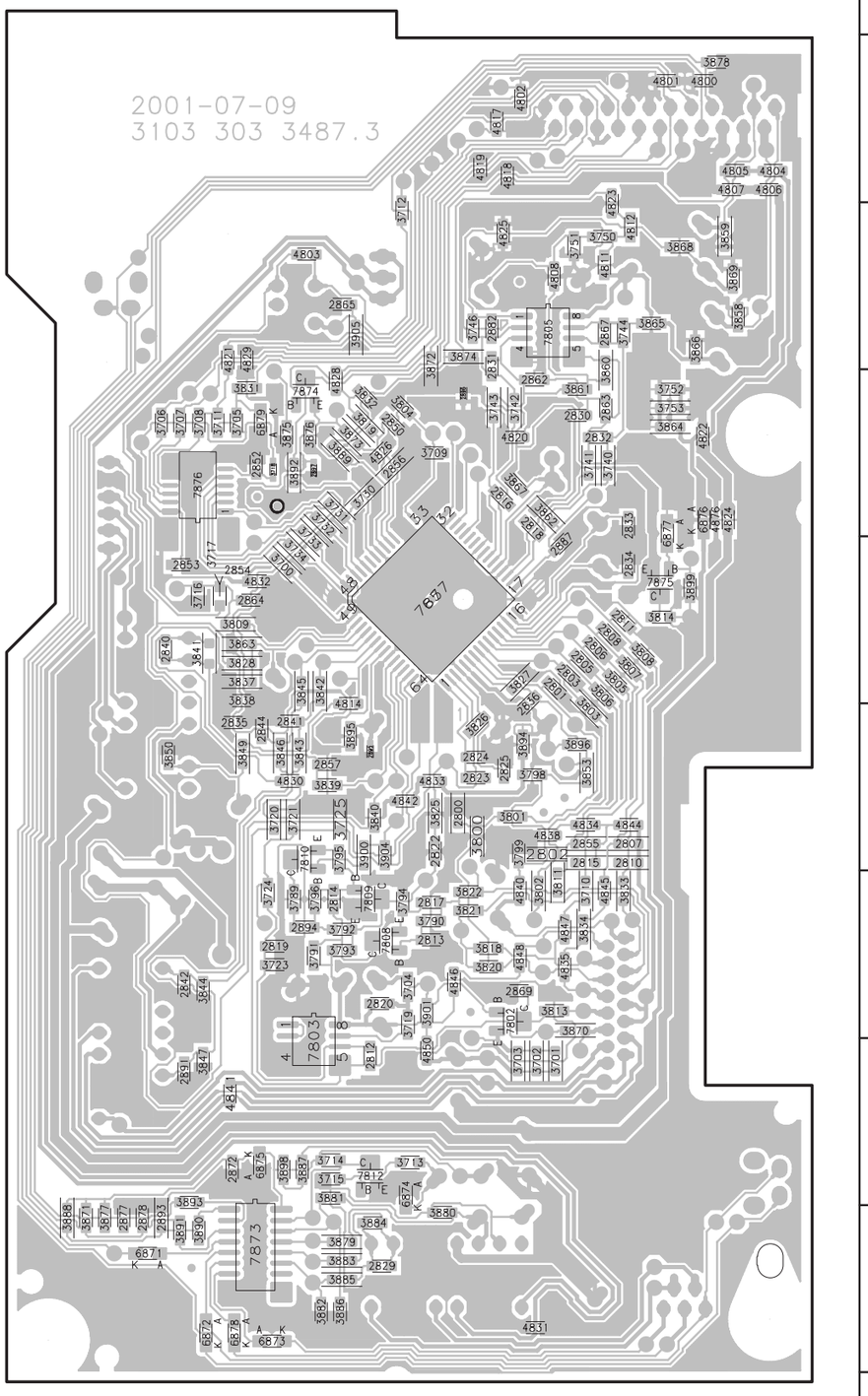
10-7

1800 F1	2804 D4	2811 A9	2818 B11	2826 G12	2838 D8	2851 B11	2888 C4	3702 D3	3721 D6	3792 F8	3800 D8	3807 B9	3819 D14	3828 G11	3839 H6	3846 F5	3863 G13	3895 G12	7803-B D5	MP713 C9	MP743 D2	MP813 B3	MP820 F8	MP837 D4	MP844 E9	MP851 E2	MP873 H4	MP884 C5
1801 G1	2805 C8	2812 D5	2819 E5	2828 G13	2839 F4	2855 C8	2891 F4	3703 D3	3723 E6	3793 E8	3801 D8	3808 A9	3820 C3	3832 C15	3840 G5	3847 F5	3867 A11	3896 E9	7806 G3	MP715 D9	MP744 C2	MP814 G2	MP821 C15	MP838 G6	MP845 F4	MP852 G2	MP875 F13	MP893 F10
1810 B10	2806 B8	2813 F7	2820 D4	2833 B10	2840 G4	2856 D15	2894 F8	3704 D4	3724 D6	3794 F7	3802 C8	3811 C8	3821 B3	3833 A8	3841 G5	3849 H5	3870 E2	3900 F9	7807 H3	MP716 B9	MP745 E2	MP815 B3	MP827 B10	MP839 G6	MP846 H2	MP853 G2	MP876 E2	
2800 D8	2807 B8	2814 F7	2822 F9	2834 B10	2841 F5	2857 H5	2895 G12	3709 C14	3725 D6	3795 F8	3803 C8	3812 H4	3822 B3	3834 B8	3842 E6	3850 H5	3873 D14	3901 D4	7808 F7	MP717 A9	MP800 E2	MP816 A3	MP828 G11	MP840 E6	MP847 H2	MP858 G8	MP877 E3	
2801 D8	2808 B9	2815 B8	2823 F10	2835 H7	2842 E5	2869 D3	2896 H12	3710 B8	3789 F8	3796 F8	3804 C14	3813 E2	3825 F9	3835 F5	3843 E5	3852 H5	3889 D15	3904 G10	7809 G8	MP729 B9	MP802 B15	MP817 A3	MP829 A3	MP841 F6	MP848 E2	MP859 E10	MP878 B13	
2802 C8	2809 H4	2816 B12	2824 F10	2836 E10	2844 F5	2885 E9	2897 H12	3719 D4	3790 F7	3798 D8	3805 B8	3815 C4	3826 F9	3837 G7	3844 E5	3853 E9	3892 E15	7802 D3	7810 F9	MP730 C9	MP809 D10	MP818 C4	MP831 A4	MP842 H6	MP849 E2	MP860 C2	MP879 B11	
2803 C8	2810 A8	2817 F7	2825 E9	2837 H4	2850 C14	2887 B10	3701 D3	3720 D5	3791 E7	3799 D8	3806 C8	3818 B3	3827 E10	3838 H7	3845 F6	3862 A10	3894 E9	7803-A B5	7877 D12	MP731 B13	MP812 G2	MP819 F10	MP836 D3	MP843 G7	MP850 E2	MP872 C15	MP883 C4	



10-8

3CDC-LLC Copperside view



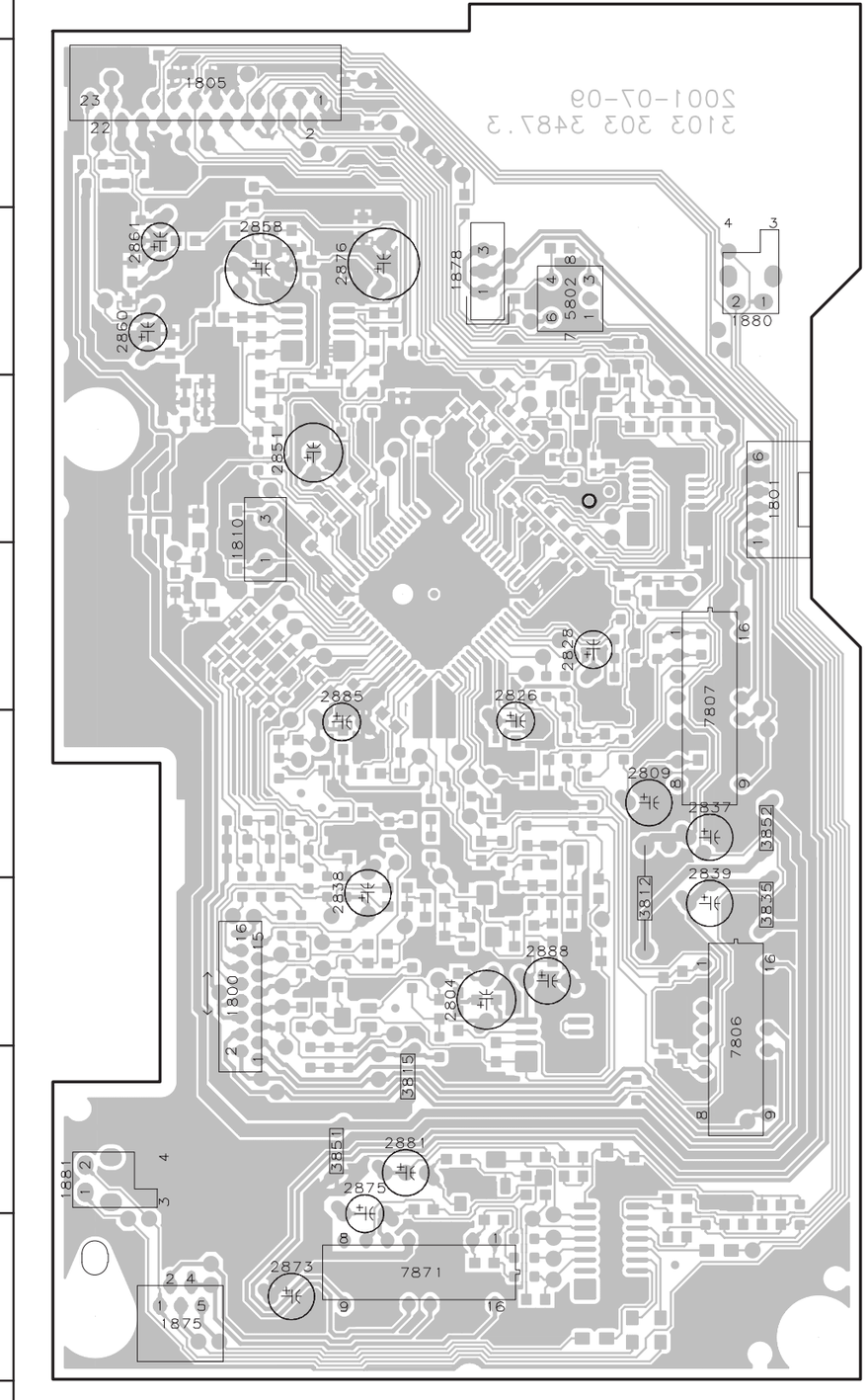
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LIC Layout stage .3 2001-07-25

Mapping

Copperside						Componentside	
2800	E3	3741	C4	3889	C2	1800	F2
2801	D4	3742	C4	3890	H2	1801	C5
2802	E4	3743	C3	3891	H2	1805	A2
2803	D4	3744	B4	3892	C2	1810	C2
2805	D4	3746	B3	3893	G2	1875	H1
2806	D4	3750	B4	3894	E4	1878	B3
2807	E4	3751	B4	3895	E3	1880	B5
2808	D4	3752	C4	3896	E4	1881	G1
2810	E4	3753	C4	3898	G2	2804	F3
2811	D4	3789	F2	3899	D5	2809	E4
2812	G3	3790	F3	3900	E3	2826	D3
2813	F3	3791	F2	3901	F3	2828	D4
2814	F2	3792	F3	3904	E3	2837	E5
2815	E4	3793	F3	3905	B3	2838	F2
2816	C3	3794	F3	4800	A5	2839	E5
2817	F3	3795	E2	4801	A4	2851	C2
2818	C4	3796	F2	4802	A4	2858	B2
2819	F2	3798	E4	4803	B2	2860	B1
2820	F3	3799	E4	4804	A5	2861	B1
2822	E3	3800	E3	4805	A5	2873	H2
2823	E3	3801	E4	4806	A5	2875	G3
2824	E3	3802	F4	4807	A5	2876	B2
2825	E3	3803	D4	4808	B4	2881	G3
2829	H3	3804	C3	4811	B4	2885	D2
2830	C4	3805	D4	4812	B4	2888	F4
2831	B3	3806	D4	4814	D3	3812	F4
2832	C4	3807	D4	4817	A3	3815	G3
2833	C4	3808	D4	4818	A3	3835	F5
2834	D4	3809	D2	4819	A3	3851	G2
2835	E2	3811	F4	4820	C4	3852	E5
2836	D4	3813	F4	4821	B2	5802	B4
2840	D1	3814	D4	4822	C5	7806	F5
2841	E2	3818	F3	4823	A4	7807	D5
2842	F2	3819	C3	4824	C5	7871	H3
2844	E2	3820	F3	4825	B3		
2850	C3	3821	F3	4826	C3		
2852	C2	3822	F3	4828	C2		
2853	D2	3825	E3	4829	B2		
2854	D2	3826	E3	4830	E2		
2855	E4	3827	D4	4831	H4		
2856	C3	3828	D2	4832	D2		
2857	E2	3831	C2	4833	E3		
2862	C4	3832	C3	4834	E4		
2863	C4	3833	F4	4835	F4		
2864	D2	3834	F4	4838	E4		
2865	B3	3837	D2	4840	F4		
2867	B4	3838	D2	4841	G2		
2869	F4	3839	E2	4842	E3		
2872	G2	3840	E3	4844	E4		
2877	H1	3841	D2	4845	F4		
2878	H1	3842	D2	4846	F3		
2882	B3	3843	E2	4847	F4		
2887	C4	3844	F2	4848	F4		
2891	G2	3845	D2	4850	G3		
2893	H1	3846	E2	4876	C5		
2894	F2	3847	G2	6871	H1		
2895	E3	3849	E2	6872	H2		
2896	C3	3850	E1	6873	H2		
2897	C2	3853	E4	6874	G3		
3700	D2	3858	B5	6875	G2		
3701	G4	3859	B5	6876	C5		
3702	G4	3860	B4	6877	C4		
3703	G4	3861	C4	6878	H2		
3704	F3	3862	C4	6879	C2		
3705	C2	3863	D2	7802	F4		
3706	C1	3864	C4	7803	F2		
3707	C2	3865	B4	7805	B4		
3708	C2	3866	B5	7808	F3		
3709	C3	3867	C4	7809	F3		
3710	F4	3868	B5	7810	E2		
3711	C2	3869	B5	7812	G3		
3712	A3	3870	F4	7873	H2		
3713	G3	3871	H1	7874	C2		
3714	G2	3872	B3	7875	D4		
3715	G2	3873	C3	7876	C2		
3716	D2	3874	B3	7877	D3		
3717	D2	3875	C2				
3718	C2	3876	C2				
3719	F3	3877	H1				
3720	E2	3878	A5				
3721	E2	3879	H3				
3723	F2	3880	G3				
3724	F2	3881	G2				
3725	E2	3882	H2				
3730	C3	3883	H3				
3731	C2	3884	H3				
3732	C2	3885	H3				
3733	C2	3886	H2				
3734	D2	3887	G2				
3740	C4	3888	H1				

3CDC-LLC Componentside view



This assembly drawing shows a summary
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3CDC-LLC Layout stage .3 2001-07-25

10-9

1805 E15 1875 D2 1878 E2 1880 F8 1881 E8 2829 D6
2830 C9 2831 B9 2832 A8 2852 H2 2853 G4 2854 B3
2858 A9 2860 A11 2861 B11 2862 B8 2863 B8 2864 B3
2865 C4 2867 A8 2872 G10 2873 D6 2875 E6 2876 C7
2877 F11 2878 F11 2881 F8 2882 B10 2893 F12 3700 H2
3705 G4 3706 G4 3707 G4 3708 H4 3711 G5 3712 B4
3713 G8 3714 F8 3715 G8 3716 B3 3717 B3 3718 G3
3730 G2 3731 G2 3732 G2 3733 G2 3734 H2 3740 A7
3741 A7 3742 B7 3743 B7 3744 A9 3746 B10 3750 B7
3751 C7 3752 A6 3753 A6 3809 B2 3814 D12 3831 G4
3851 D7 3858 A11 3859 B11 3860 B7 3861 B8 3864 A7
3865 A10 3866 A10 3868 B10 3869 B10 3871 F12 3872 C13
3874 C13 3875 C12 3876 C11 3877 F12 3878 E12 3879 D7
3880 E6 3881 E7 3882 D7 3883 D6 3884 D6 3885 F11
3886 E7 3887 D6 3888 F12 3890 F11 3891 F11 3893 F11
3898 F7 3899 D12 3905 C5 4803 B4 4811 A7 4812 B7
4876 D13 5802 B4 6871 F8 6872 E8 6873 E8 6874 G7
6875 F7 6876 D13 6877 D12 6878 E8 6879 G4 7805-A B9
7805-B A8 7812 G8 7871 C5 7873 D10 7874 C12 7875 D12
7876 G3 MP721 C8 MP722 E8 MP723 D8 MP724 D8 MP725 D8
MP726 D8 MP740 H14 MP741 G14 MP742 G14 MP801 E12 MP803 F10
MP804 G14 MP805 F13 MP806 F13 MP807 F14 MP808 F13 MP810 F13
MP811 F14 MP822 E3 MP823 E3 MP824 D4 MP825 D4 MP830 A7
MP832 G9 MP833 F14 MP835 F14 MP854 A13 MP856 E14 MP857 B13
MP863 C11 MP865 D11 MP866 E8 MP867 E8 MP868 F8 MP869 C12
MP871 D6 MP874 D12 MP881 G2 MP882 G2 MP886 G3 MP887 H5
MP888 G5 MP889 G5 MP890 B3 MP891 B5 MP892 B5 MP897 E13
MP898 E13 MP899 E14

3CDC-LLC mainboard

part 2

digital out circuitry - 75Ω version (not on all versions)

from 7877 on part1 DOBM — 3809 10R — 2854 47n — 5802 920927152B — 3712 10R — COAX2 / to 1805 / COAX1
2864 22p — 3716 470R — 2865 22n

digital out circuitry (not for 75Ω Versions)

from 7877 on part1 DOBM — 3809 470R — 3717 1R — 3712 10R — COAX2 to 1805
3716 470R

FROM 7877 ON PART 1

+5.6V — 3864 100R — 4.5V — 220u 2858 — GNDA

LP 3741 22K — 2V — 7805-B TDA1308T — 2.3V — 3865 100R — 2860 10u — 3858 47K — GNDA
LN 3740 22K — 2832 100p — 2867 220p — 3744 10K — GNDA — 4811

RP 3743 22K — 2V — 7805-A TDA1308T — 2.3V — 3868 100R — 2861 10u — 3859 47K — GNDA
RN 3742 22K — 2831 100p — 2882 220p — 3746 10K — GNDA

3750 1K — 3860 10K — 2863 220p — 3861 10K — 2862 220p
3751 1K — 2876 220u — GNDA GNDA GNDA GNDA

2830 47n — D — GNDA

to/from 7877 on part 1 — 3.2V SDA 0V

+3.3V — 3872 #10K — 3874# 10K
SICL
SILD
SDA — 7874 — 3V-5V log. Level Transformer — BC847B — 3876 100K

+3.3V — 3875 10K — voltage stab. — 4.2V 3814 33R — 4876 — 7875 3.3V BC847B — 6876# BAS216 — 6877 BZX284-C3V9 — 3899 100R — 4.1V — 5.6V version only

+3.3V
+4V
+5V
+5.6V — 5V(5.6V)
+10V

7871 TDA7073A — 4.9V — 5.1V — OUT1- — VDD 10V — 2829 22n — 3884 270R — 3885 10K — 47K 3882 — D
3883 10K — 3851 3R3 — +10V
2873 47u — 3887 220R — D
3879 100K — 3881 100K — 2875 10u — 3880 3K9 — 3886 47K — D

CAROUSEL-MOTOR — 1876 — 8002 — 1875 — FE-ST-VK-N
POS1 rec — 1882
RF-500TB
1883 POS rec
1877 — 8003 — 1878 — DIPMATE
DRAWER-MOTOR

DRIVE UP/DOWN — 1881
TRAY POS — 1880

7873 HEF4094BT — changer control logic
STB — EN1 — SRG8 — 16
0V — 5.2V

6873 BAS216
6878 BAS216
6872 BAS216
6871 BAS216

220R 3898 — 6875 BZX284-C 5V1

3890 1K — 3891 1K — 3893 470R — 10K 3878
2877 47n — 2878 47n — 2893 220p — 2220p — 3877 10K — 3871 — 3888 10K

2881 47n — 3714 10K — 3713 22K — 3715 100K — 6874 BAS216 — 7812 BC847B — Output enable delay circuitry
2872 47n

to combi-board

1805 — BASIC VERSION (15 Pin)

19	23	LEFT	
18	22	GNDA	
17	21	RIGHT	
16	20	+5V(+5.6V)	
15	19	GND	
14	18	+10V	
13	17	SW_INFO	
12	16	SHR_STR	
11	15	SHR_CL	
10	14	SICL	
9	13	DATA	
8	12	SILD	
7	11	GND	
6	10	PORE	to 7877 on part 1
5	9	GND	

DIG. OUT (19 Pin)

4	8	COAX1/+3V	from digital-out circuitry
3	7	COAX2/EBU	
2	6	EBU_GND	
1	5	GND	

CD-TEXT (23 Pin)

4	SRDT		
3	DQSY		
2	uP_CLK		
1	GND		

FE-ST-VK-N

CD-Text circuitry (optional)

to 7877 on part1 — 7.35KHz — 11MHz
3730 3K — RCK 3731 10K — SUB 3732 470R — SBSY 3733 470R — SFSY 3734 470R — CL11 3700 470R

7876 LC89170M
EXCK — SBSO — SCOR — WFCK — MCK — XMODE — GND
32 x 8 2 PORT RAM — CPU INTERF — CRC CHECK — TIMING & SYNC PROTECTION
VDD — DQSY — SRDT — SCLK — SW2 — SW1 — TEST
DQSY 3706 470R — SRDT 3707 470R — SCLK 3708 470R

3718 4K7 — 2853 22n — 220R 3705 — 3831 100R — 4V — 6879 BZX284-C3V9 — 3711 10K
2852 47n

CD-TEXT INFO
4V DQSY — 3.3ms — SCLK — SRDT
only during TOC-reading

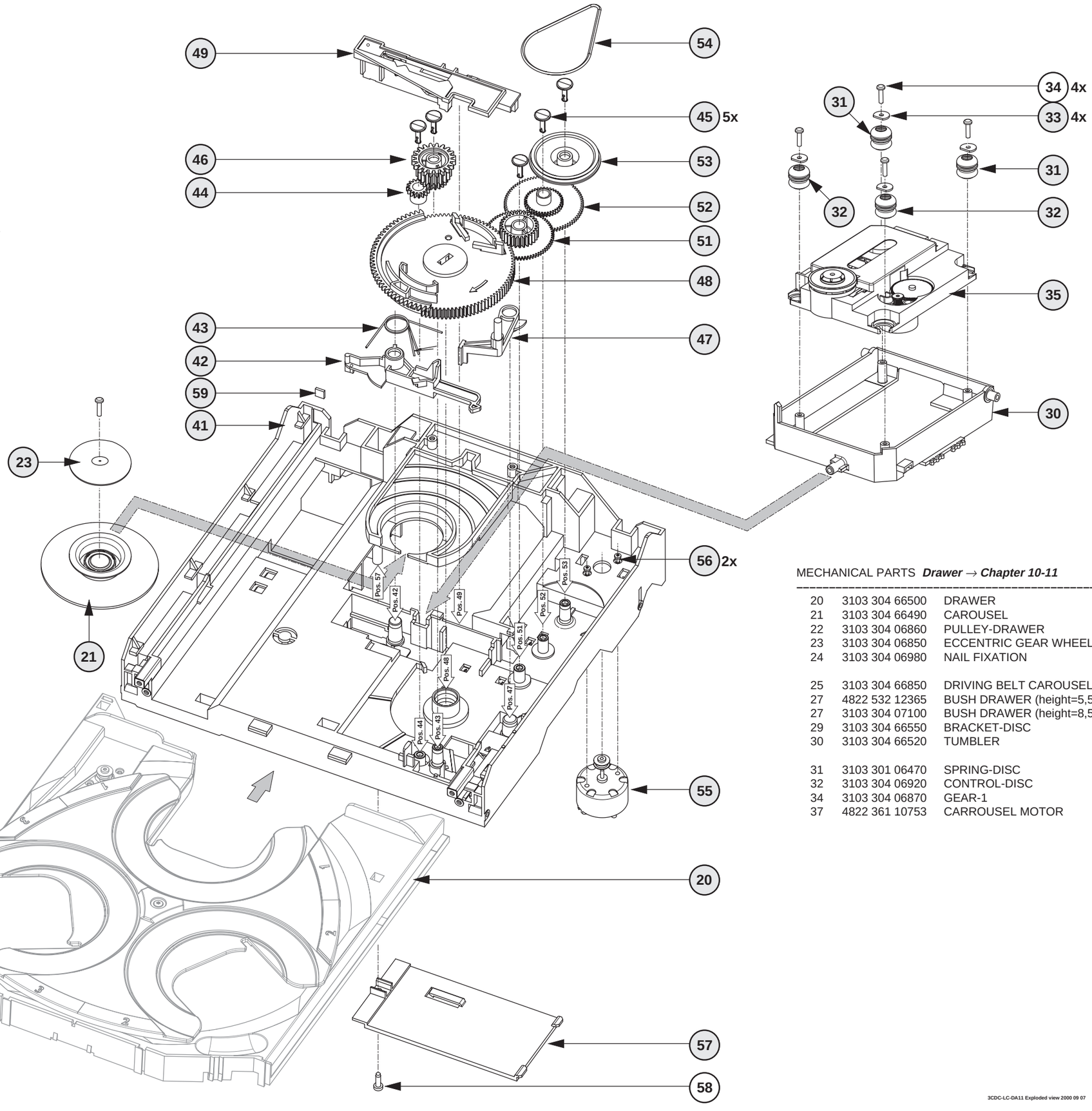
. . . V DC voltages measured in *PLAY MODE* with following conditions: "+10V" = 10V "+5V" = 5V
V EVM

10-10

EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS ***Loader → this page***

20	3103 304 66500	DRAWER
21	3140 114 29070	PRESSURE RING-MCD1
23	3140 111 21270	METAL RING-MCD1
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05350	CD DRIVE MCD1B
41	3103 304 66480	FRAME
42	3103 304 66540	BRACKET-GUIDING
43	3103 301 06460	SPRING-GUIDING
44	3103 304 06890	GEAR-3
45	3103 304 06980	NAIL FIXATION
46	3103 304 06880	GEAR-2
47	3103 304 66530	BRACKET-LOAD
48	3103 304 06910	CAM
49	3103 304 66510	GUIDING
51	3103 304 06900	GEAR-4
52	3103 304 06870	GEAR-1
53	3103 304 06960	PULLEY-FRAME
54	3103 304 66910	DRIVING-BELT-DRAWER
55	4822 361 10753	TRAY MOTOR
56	4822 502 12548	SCREW M2,6X3,5
57	3103 304 69880	COVER-MCD1
59	4822 466 12146	RUBBER



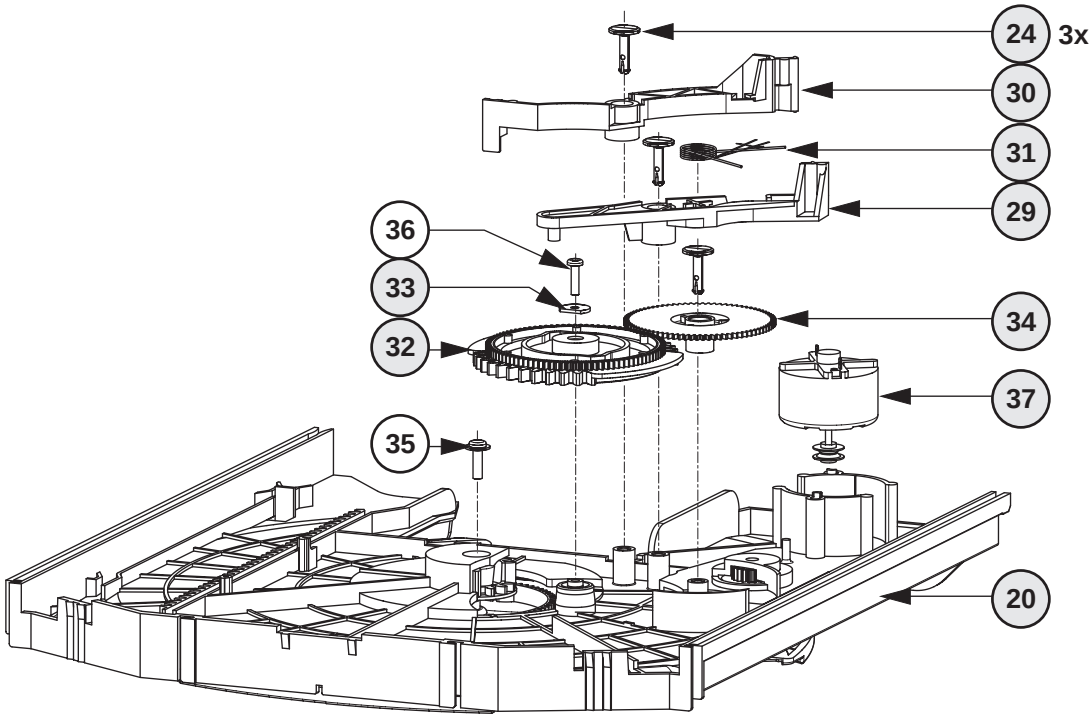
MECHANICAL PARTS ***Drawer → Chapter 10-11***

20	3103 304 66500	DRAWER
21	3103 304 66490	CAROUSEL
22	3103 304 06860	PULLEY-DRAWER
23	3103 304 06850	ECCENTRIC GEAR WHEEL
24	3103 304 06980	NAIL FIXATION
25	3103 304 66850	DRIVING BELT CAROUSEL
27	4822 532 12365	BUSH DRAWER (height=5,5mm,d=9,4mm)
27	3103 304 07100	BUSH DRAWER (height=8,5mm,d=16mm)
29	3103 304 66550	BRACKET-DISC
30	3103 304 66520	TUMBLER
31	3103 301 06470	SPRING-DISC
32	3103 304 06920	CONTROL-DISC
34	3103 304 06870	GEAR-1
37	4822 361 10753	CARROUSEL MOTOR

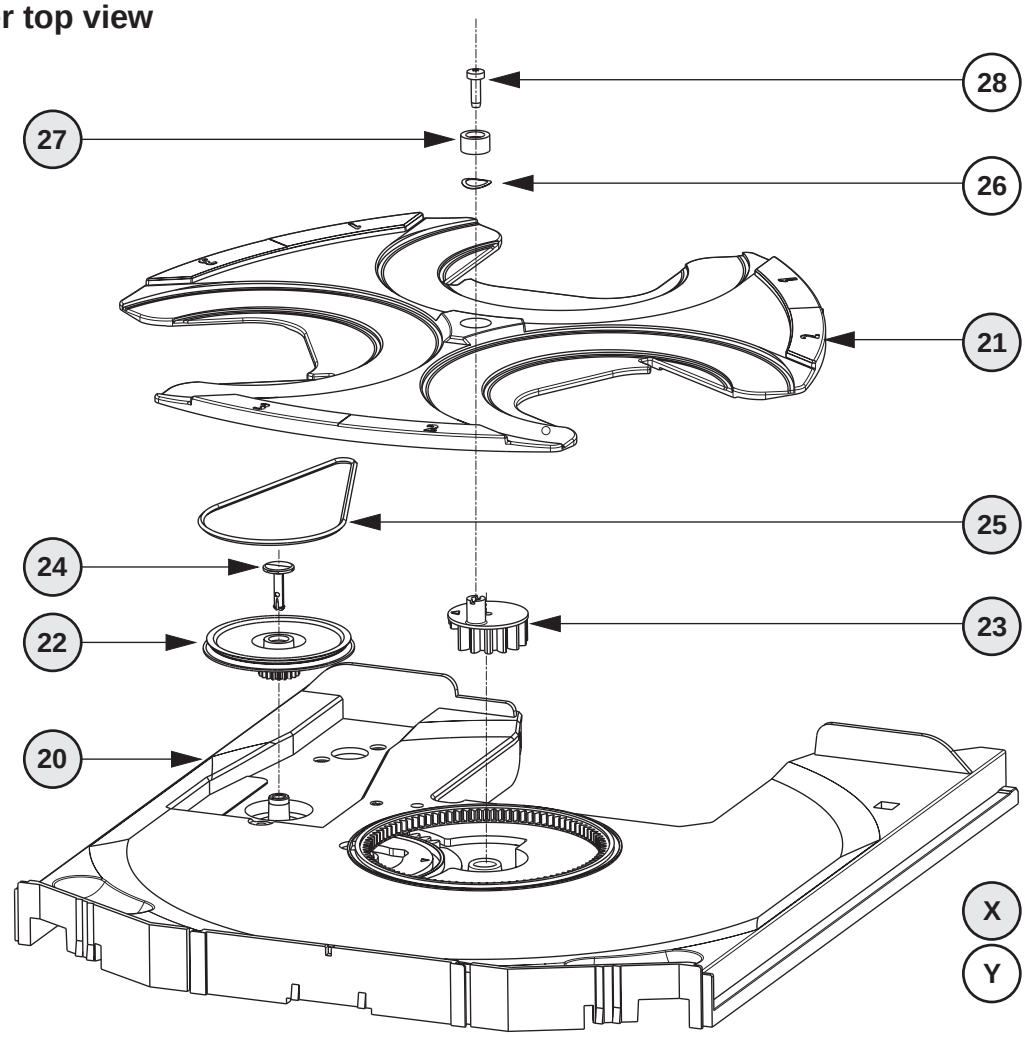
X spare part

Y non spare part

Drawer bottom view



Drawer top view



X spare part

Y non spare part

ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE

MISCELLANEOUS

35	3103 309 05350	CD DRIVE MCD1B
37	4822 361 10753	CAROUSEL MOTOR
55	4822 361 10753	TRAY MOTOR
1800	2422 025 17389	FLEX FOIL CONNECTOR 16Pin
1805	4822 265 10979	FLEX FOIL CONNECTOR 15Pin
1805	4822 265 11545	FLEX FOIL CONNECTOR 19Pin
1875	4822 267 10958	FLEX FOIL CONNECTOR 5Pin
1876	2422 025 08332	FLEX FOIL CONNECTOR 5Pin
1880	4822 276 13503	SWITCH, Tray switch
1881	4822 276 13503	SWITCH, Drive UP/DOWN
1882	4822 276 13503	SWITCH, CD Pos.1 recognized
1883	4822 276 13503	SWITCH, valid CD Play position
8002	3103 308 91990	FLEX FOIL CABLE 5P, 200mm 1:n
8005	3103 308 92930	FLEX FOIL CABLE 16P 170mm 1:n

CAPACITORS

2800 ©	4822 122 33172	390pF	5%	50V
2801 ©	4822 126 13883	220pF	5%	50V
2802 ©	4822 122 33172	390pF	5%	50V
2803 ©	4822 126 13883	220pF	5%	50V
2804	4822 124 41751	47µF	20%	16V
2805 ©	4822 126 13883	220pF	5%	50V
2806 ©	4822 126 13883	220pF	5%	50V
2807 ©	5322 122 31863	330pF	5%	50V
2808 ©	4822 126 13883	220pF	5%	50V
2809	4822 124 40746	0,22µF	20%	63V
2810 ©	4822 126 10326	180pF	5%	
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	2222 867 15339	33pF	5%	50V
2813 ©	4822 126 14226	82pF		50V
2814 ©	2238 246 59858	450nF	20%	10V
2815 ©	4822 122 33172	390pF	5%	50V
2816 ©	4822 126 14247	1,5nF	10%	50V
2817 ©	4822 126 14249	560pF	10%	50V
2818 ©	4822 126 13344	1,5nF	5%	63V
2819 ©	5322 126 11578	1nF	10%	63V
2820 ©	4822 126 14305	100nF	10%	16V
2822 ©	5322 122 31866	6,8nF	10%	63V
2823 ©	3198 016 31510	150pF	10%	50V
2824 ©	5322 122 32654	22nF	10%	63V
2825 ©	4822 122 33891	3,3nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2828	4822 124 12362	47µF	20%	4V
2829 ©	3198 017 42230	22nF	10%	50V
2830 ©	4822 126 13751	47nF	10%	50V
2831 ©	4822 122 31765	100pF	5%	50V
2832 ©	4822 122 31765	100pF	5%	50V
2835 ©	3198 024 44730	47nF	5%	50V
2836 ©	3198 024 44730	47nF	5%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V
2839	4822 124 40433	47µF	20%	25V
2840 ©	4822 126 14585	100nF	10%	50V
2841 ©	5322 126 10511	1nF	5%	50V
2842 ©	4822 126 14247	1,5nF	10%	50V
2844 ©	3198 016 31020	1nF	5%	25V
2850 ©	5322 126 11578	1nF	10%	63V
2851	4822 124 42383	220µF	20%	4V
2855 ©	4822 122 33172	390pF	5%	50V
2856 ©	4822 126 13691	27pF	1%	63V
2857 ©	5322 126 11583	10nF	10%	63V
2858	4822 124 12245	220µF	20%	16V

CAPACITORS

2860	4822 124 11947	10µF	20%	16V
2861	4822 124 11947	10µF	20%	16V
2862 ©	4822 126 13883	220pF	5%	50V
2863 ©	4822 126 13883	220pF	5%	50V
2865 ©	4822 126 14494	22nF	10%	25V
2867 ©	4822 126 13883	220pF	5%	50V
2872 ©	3198 024 44730	47nF	5%	50V
2873	4822 124 80231	47µF	20%	16V
2875	4822 124 11947	10µF	20%	16V
2876	4822 124 12245	220µF	20%	16V
2877 ©	4822 122 33777	47pF	5%	63V
2878 ©	4822 126 13883	220pF	5%	50V
2881	4822 124 40769	4,7µF	20%	100V
2882 ©	4822 126 13883	220pF	5%	50V
2885	4822 124 40769	4,7µF	20%	100V
2887 ©	4822 126 14585	100nF	10%	50V
2888	4822 124 80231	47µF	20%	16V
2891 ©	4822 126 14247	1,5nF	10%	50V
2893 ©	4822 122 33575	220pF	5%	50V
2894 ©	3198 017 44740	470nF	20%	10V
2895 ©	4822 126 14305	100nF	10%	16V
2896 ©	4822 126 14305	100nF	10%	16V
2897 ©	4822 126 14305	100nF	10%	16V

RESISTORS

3701 ©	4822 051 20479	47Ω	5%	0,1W
3702 ©	4822 051 20479	47Ω	5%	0,1W
3703 ©	4822 051 20479	47Ω	5%	0,1W
3704 ©	4822 117 12917	1Ω	5%	0,06W
3710 ©	4822 051 51831	18kΩ	5%	0,1W
3712 ©	4822 051 30109	10Ω	5%	0,06W
3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3716 ©	4822 051 30471	470Ω	5%	0,06W
3717 ©	4822 117 12917	1Ω	5%	0,06W
3719 ©	4822 051 30102	1kΩ	5%	0,06W
3720 ©	4822 051 20474	470kΩ	5%	0,1W
3721 ©	4822 051 20393	39kΩ	5%	0,1W
3723 ©	4822 051 30272	2,7kΩ	5%	0,06W
3724 ©	4822 117 12902	8,2kΩ	1%	0,06W
3725 ©	4822 051 30184	180kΩ	5%	0,06W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3740 ©	4822 051 20223	22kΩ	5%	0,1W
3741 ©	4822 051 20223	22kΩ	5%	0,1W
3742 ©	4822 051 20223	22kΩ	5%	0,1W
3743 ©	4822 051 20223	22kΩ	5%	0,1W
3744 ©	4822 051 30103	10kΩ	5%	0,06W
3746 ©	4822 051 30103	10kΩ	5%	0,06W
3750 ©	4822 051 30102	1kΩ	5%	0,06W
3751 ©	4822 051 30102	1kΩ	5%	0,06W
3789 ©	4822 051 30471	470Ω	5%	0,06W
3790 ©	4822 051 30561	560Ω	5%	0,06W
3791 ©	4822 117 12968	820Ω	5%	0,06W
3792 ©	4822 051 30332	3,3kΩ	5%	0,06W
3793 ©	4822 051 20471	470Ω	5%	0,1W
3794 ©	4822 051 30391	390Ω	5%	0,06W
3795 ©	4822 051 30222	2,2kΩ	5%	0,06W
3796 ©	4822 051 30332	3,3kΩ	5%	0,06W
3798 ©	4822 051 30102	1kΩ	5%	0,06W
3799 ©	4822 051 30102	1kΩ	5%	0,06W
3800 ©	4822 051 51831	18kΩ	5%	0,1W

ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE

RESISTORS

3801 ©	4822 051 30103	10kΩ	5%	0,06W	
3802 ©	4822 051 51831	18kΩ	5%	0,1W	
3803 ©	4822 117 10833	10kΩ	1%	0,1W	
3804 ©	4822 051 30103	10kΩ	5%	0,06W	
3805 ©	4822 051 30103	10kΩ	5%	0,06W	
3806 ©	4822 051 30103	10kΩ	5%	0,06W	
3807 ©	4822 051 30103	10kΩ	5%	0,06W	
3808 ©	4822 051 30103	10kΩ	5%	0,06W	
3809 ©	4822 051 20471	470Ω	5%	0,1W	
3811 ©	4822 051 51831	18kΩ	5%	0,1W	
3812	4822 053 10228	2,2Ω	5%	1W	
3813 ©	4822 117 13608	4,7Ω	5%	0,06W	
3814 ©	4822 051 30339	33Ω	5%	0,06W	
3815	4822 052 10478	4,7Ω	5%	NFR	
3818 ©	4822 051 30222	2,2kΩ	5%	0,06W	
3819 ©	4822 051 20471	470Ω	5%	0,1W	
3820 ©	4822 051 30222	2,2kΩ	5%	0,06W	
3821 ©	4822 051 30222	2,2kΩ	5%	0,06W	
3822 ©	4822 051 30222	2,2kΩ	5%	0,06W	
3825 ©	4822 051 20181	180Ω	5%	0,1W	
3826 ©	4822 051 30333	33kΩ	5%	0,06W	
3827 ©	4822 051 20273	27kΩ	5%	0,1W	
3828 ©	4822 051 20223	22kΩ	5%	0,1W	
3831 ©	4822 051 30101	100Ω	5%	0,06W	
3832 ©	4822 051 30103	10kΩ	5%	0,06W	
3833 ©	4822 051 30223	22kΩ	5%	0,06W	
3834 ©	4822 051 20223	22kΩ	5%	0,1W	
3835	4822 052 10478	4,7Ω	5%	NFR	
3837 ©	4822 051 10102	1kΩ	2%	0,25W	
3838 ©	4822 051 30102	1kΩ	5%	0,06W	
3839 ©	4822 051 20124	120kΩ	5%	0,1W	
3840 ©	4822 051 30124	120kΩ	5%	0,06W	
3841 ©	4822 117 10833	10kΩ	1%	0,1W	
3842 ©	4822 117 10833	10kΩ	1%	0,1W	
3843 ©	4822 117 10834	47kΩ	1%	0,1W	
3844 ©	4822 051 20392	3,9kΩ	5%	0,1W	
3845 ©	4822 117 10833	10kΩ	1%	0,1W	
3846 ©	4822 117 10834	47kΩ	1%	0,1W	
3847 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3849 ©	4822 051 20334	330kΩ	5%	0,1W	
3850 ©	4822 051 30103	10kΩ	5%	0,06W	
3851	4822 052 10338	3,3Ω		NFR25	
3852	4822 052 10228	2,2Ω	5%	0,33W	
3853 ©	4822 051 20471	470Ω	5%	0,1W	
3858 ©	4822 117 12925	47kΩ	1%	0,06W	
3859 ©	4822 117 10834	47kΩ	1%	0,1W	
3860 ©	4822 117 10833	10kΩ	1%	0,1W	
3861 ©	4822 051 30103	10kΩ	5%	0,06W	
3862 ©	4822 051 20121	120Ω	5%	0,1W	
3863 ©	4822 117 11373	100Ω	1%	0,1W	
3864 ©	4822 117 11373	100Ω	1%	0,1W	
3865 ©	4822 051 30101	100Ω	5%	0,06W	
3867 ©	4822 051 30121	120Ω	5%	0,06W	
3868 ©	4822 051 30101	100Ω	5%	0,06W	
3870 ©	4822 051 20472	4,7kΩ	5%	0,1W	
3871 ©	4822 051 30103	10kΩ	5%	0,06W	
3873 ©	4822 051 20471	470Ω	5%	0,1W	
3875 ©	4822 051 30103	10kΩ	5%	0,06W	
3876 ©	4822 117 13632	100kΩ	1%	0,06W	
3877 ©	4822 051 30103	10kΩ	5%	0,06W	
3878 ©	4822 051 30103	10kΩ	5%	0,06W	
3879 ©	4822 117 10837	100kΩ	1%	0,1W	

RESISTORS

3880 ©	4822 051 30392	3,9kΩ	5%	0,06W	
3881 ©	4822 117 13632	100kΩ	1%	0,06W	
3882 ©	4822 117 12925	47kΩ	1%	0,06W	
3883 ©	4822 117 10833	10kΩ	1%	0,1W	
3884 ©	4822 051 30271	270Ω	5%	0,06W	
3885 ©	4822 117 10833	10kΩ	1%	0,1W	
3886 ©	4822 117 12925	47kΩ	1%	0,06W	
3887 ©	4822 051 30221	220Ω	5%	0,06W	
3888 ©	4822 117 10833	10kΩ	1%	0,1W	
3889 ©	4822 051 20471	470Ω	5%	0,1W	
3890 ©	4822 051 30102	1kΩ	5%	0,06W	
3891 ©	4822 051 30102	1kΩ	5%	0,06W	
3892 ©	4822 051 20471	470Ω	5%	0,1W	
3893 ©	4822 051 30471	470Ω	5%	0,06W	
3894 ©	4822 051 30101	100Ω	5%	0,06W	
3895 ©	4822 117 12971	15Ω	5%	0,06W	
3898 ©	4822 051 30221	220Ω	5%	0,06W	
3899 ©	4822 051 30101	100Ω	5%	0,06W	
3900 ©	4822 117 12955	2,7kΩ	1%	0,1W	
3901 ©	4822 117 10833	10kΩ	1%	0,1W	
3904 ©	4822 117 13632	100kΩ	1%	0,06W	
4800 ©	4822 051 20008	CHIP JUMPER 0805			
4801 ©	4822 051 20008	CHIP JUMPER 0805			
4802 ©	4822 051 20008	CHIP JUMPER 0805			
4803 ©	4822 051 30008	CHIP JUMPER 0603			
4804 ©	4822 051 20008	CHIP JUMPER 0805			
4805 ©	4822 051 30008	CHIP JUMPER 0603			
4806 ©	4822 051 20008	CHIP JUMPER 0805			
4807 ©	4822 051 20008	CHIP JUMPER 0805			
4808 ©	4822 051 20008	CHIP JUMPER 0805			
4811 ©	4822 051 20008	CHIP JUMPER 0805			
4814 ©	4822 051 20008	CHIP JUMPER 0805			
4817 ©	4822 051 20008	CHIP JUMPER 0805			
4818 ©	4822 051 20008	CHIP JUMPER 0805			
4819 ©	4822 051 20008	CHIP JUMPER 0805			
4820 ©	4822 051 20008	CHIP JUMPER 0805			
4821 ©	4822 051 20008	CHIP JUMPER 0805			
4822 ©	4822 051 20008	CHIP JUMPER 0805			
4823 ©	4822 051 20008	CHIP JUMPER 0805			
4824 ©	4822 051 30008	CHIP JUMPER 0603			
4825 ©	4822 051 30008	CHIP JUMPER 0603			
4826 ©	4822 051 20008	CHIP JUMPER 0805			
4828 ©	4822 051 20008	CHIP JUMPER 0805			
4829 ©	4822 051 20008	CHIP JUMPER 0805			
4830 ©	4822 051 20008	CHIP JUMPER 0805			
4831 ©	4822 051 20008	CHIP JUMPER 0805			
4832 ©	4822 051 30008	CHIP JUMPER 0603			
4833 ©	4822 051 20008	CHIP JUMPER 0805			
4834 ©	4822 051 20008	CHIP JUMPER 0805			
4835 ©	4822 051 20008	CHIP JUMPER 0805			
4838 ©	4822 051 30008	CHIP JUMPER 0603			
4840 ©	4822 051 20008	CHIP JUMPER 0805			
4841 ©	4822 051 30008	CHIP JUMPER 0603			
4842 ©	4822 051 20008	CHIP JUMPER 0805			
4844 ©	4822 051 20008	CHIP JUMPER 0805			
4845 ©	4822 051 20008	CHIP JUMPER 0805			
4846 ©	4822 051 20008	CHIP JUMPER 0805			
4847 ©	4822 051 20008	CHIP JUMPER 0805			
4848 ©	4822 051 20008	CHIP JUMPER 0805			
4850 ©	4822 051 20008	CHIP JUMPER 0805			
4876 ©	4822 051 20008	CHIP JUMPER 0805			

ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE

COILS

1810	4822 242 73557	CERAMIC RES. 8,46MHz

DIODES

6871 ©	4822 130 11397	BAS316
6872 ©	4822 130 11397	BAS316
6873 ©	4822 130 11397	BAS316
6874 ©	4822 130 11397	BAS316
6875 ©	9340 548 52115	BZX284-C5V1
6877 ©	9322 129 34685	BZX284-C3V9
6878 ©	4822 130 11397	BAS316
6879 ©	9322 129 34685	BZX284-C3V9

TRANSISTORS

7802 ©	5322 130 60123	BC807-40
7808 ©	4822 130 60511	BC847B
7809 ©	4822 130 60511	BC847B
7810 ©	4822 130 60511	BC847B
7812 ©	4822 130 60511	BC847B
7874 ©	4822 130 60511	BC847B
7875 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7803 ©	5322 209 82941	LM358D, Dual Opamp
7805 ©	4822 209 33165	TDA1308T/N1
7806	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7871	4822 209 32852	TDA7073A/N2
7873 ©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7877 ©	9352 641 80557	SAA7324H/M2B,“CD10“ SIGN.PROC.

COMBI BOARD

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11-1

Brief introduction of the Combi Board

A. TRANSFORMER PRIMARY PART
Transformer Primary Circuit provide connection for AC mains supply and primary wires of transformer.

B. POWER SUPPLY PART
Power Supply Circuit consists of rectifiers, capacitive filters and voltage regulators. Regulated voltage include +5V6, +LED, +12A, +12M, -32V, PWDN. The +C supply to the power amplifier is not regulated. F1-F2 is the ac supply voltage to the FTD Display filament.

C. SOURCE SELECT & AMPLIFIER PART

a) SHIFT REGISTER (AF CONTROL)
This shift register deliver commands from the µP to control the AF functions which include source selection (A0 & A1 control lines), DSC modes , DBB, IS and CD_STBY. Other control lines such as MUTE, AMPON, STBY and PWM are coming directly from the µP on the Front board.

b) SOURCE SELECTION
One of the 4 sources, namely AUX, TAPE, TUNER, CD, can be selected via A0 & A1 lines which control the IC 7501 (HEF4052BT). Karaoke mic. mixing is connected to th e selected source before the signal is amplified with a buffer amplifier (Tr 7503 & 7504). The source signal is then split into recording path (for recording on tape) and main signal path (to the PWM volume control).

c) PWM VOLUME CONTROL
The discrete volume control makes use of 4 Transistors 7505, 7506, 7507 & 7508 (ON4986 or selected BC557B) and PWM control signal from µP. For good performance transistors for the left and right channels should be paired for gain characteristics.

d) SOUND FEATURES
Sound Features include the DBB, IS and 4 DSC modes. The sound features are realised with a hex-inverter IC 7530 (HEF4069UBT) as analog buffer/amplifier and transistors as electronic switches controlled by the shift registers (AF control).

e) POWER AMPLIFIER
IC 7391 (AN7125) is used as power amplifier.

f) CD_STBY CONTROL
This Transistor 7401 (BC337-25) switches on the supply +CD supply (derived from +12A) to CD servo control, HF circuit and the laser light pen on the CD Module during the CD mode only.

g) MATRIX SURROUND OUTPUT
The matrix surround feature is provided on board. This feature is only optional on certain type version.

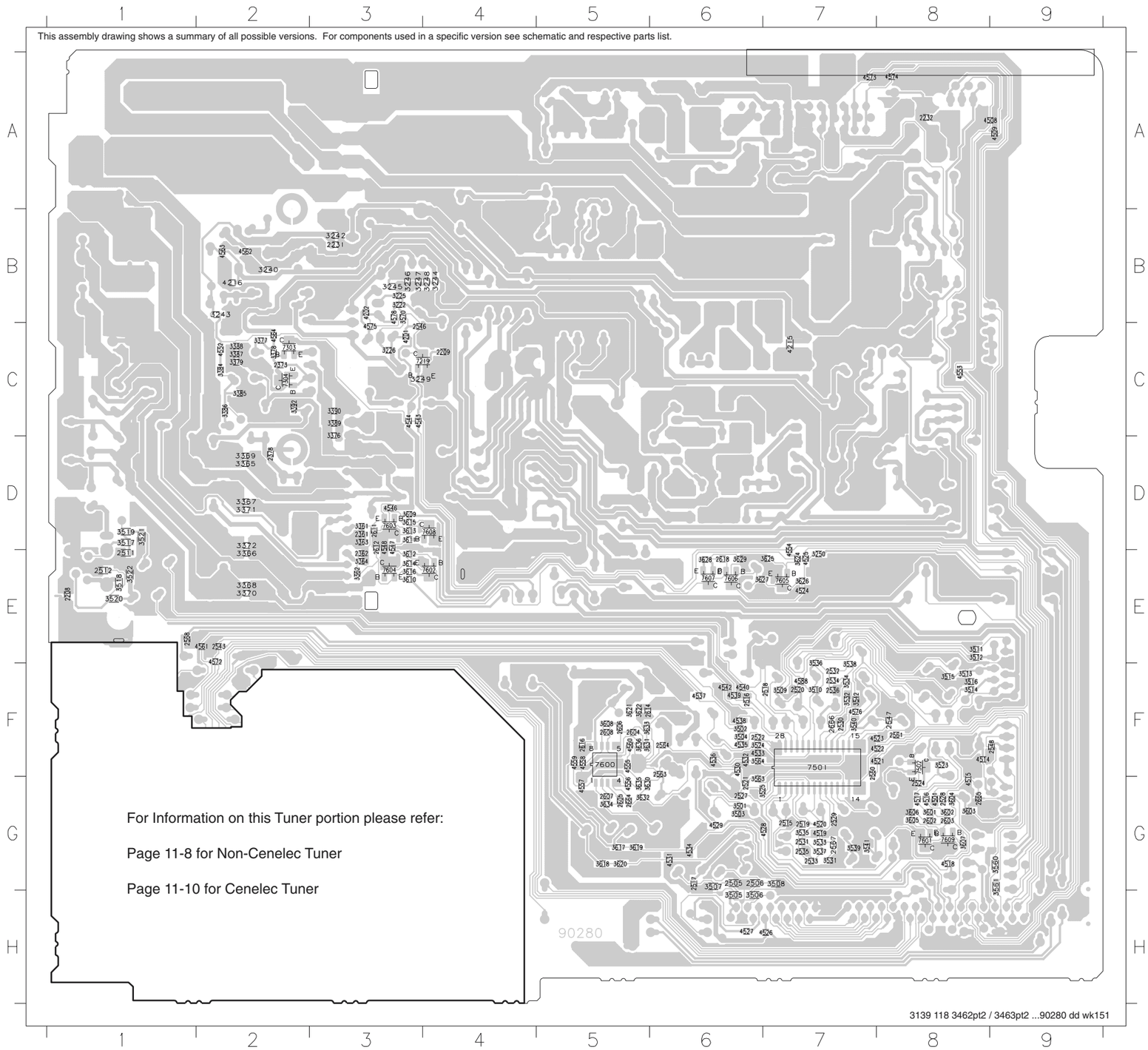
D. KARAOKE PART
This simple Karaoke consists of a 1-mic. mono amplifier using discrete components. It has a level control using a rotary potmeter. This feature is available for some version only.

E. HEADPHONE PART
The headphone output is derived from the power amplifier output after the attenuation resistors which are tailored to deliver 18mW output power into a 32 ohm headphone.

F. CDC KEY PART
The CDC key buttons and LEDs are provided on this board.

11-2

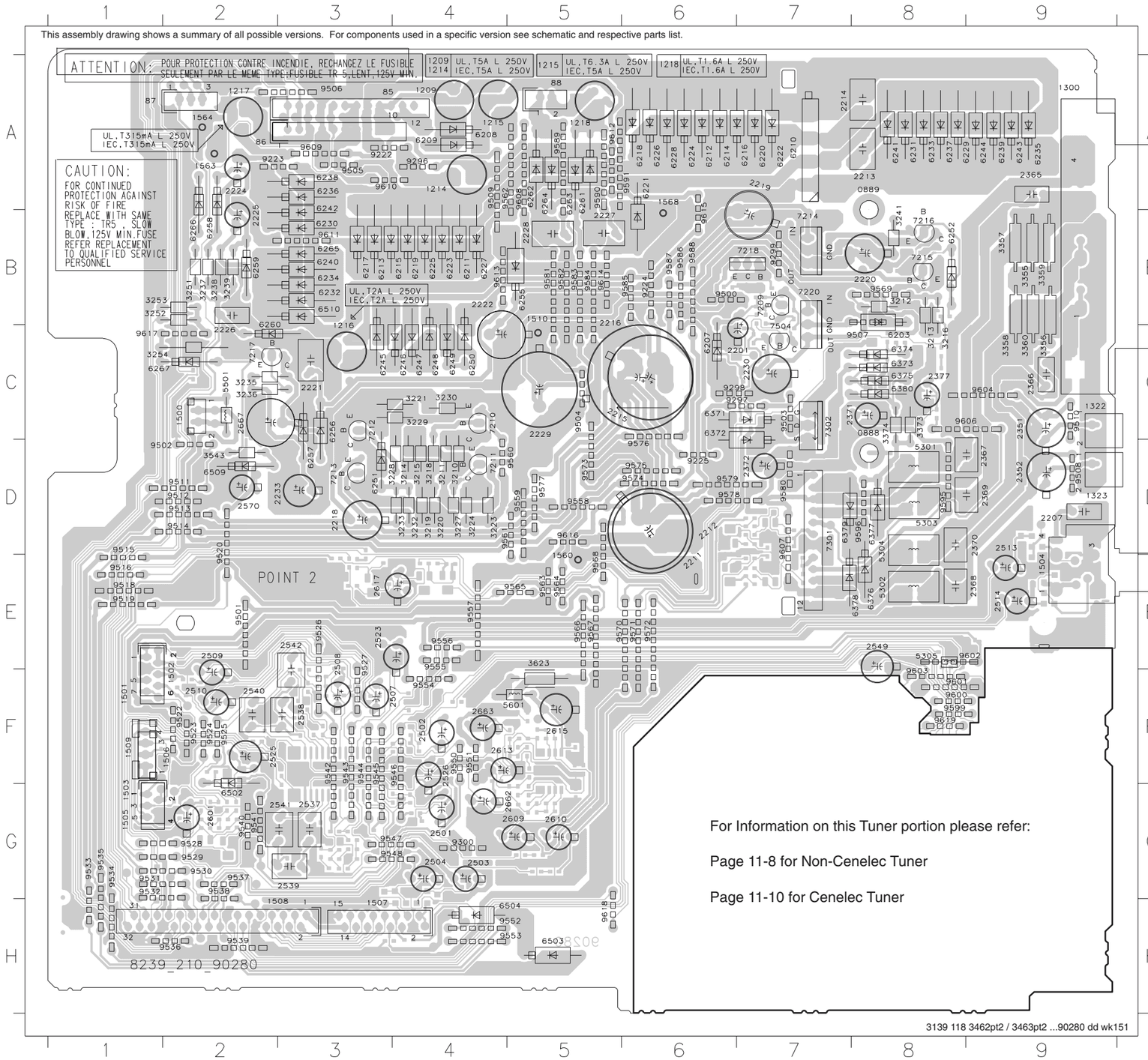
CHIP LAYOUT - MAIN PART (excluding the Tuner portion)


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
For Information on this Tuner portion please refer:
Page 11-8 for Non-Cenelec Tuner
Page 11-10 for Cenelec Tuner
7600
7501
90280
3139 118 3462pt2 / 3463pt2 ...90280 dd wk151

2208 E1 3539 G7
2209 C4 3540 F7
2231 B3 3541 G7
2232 A8 3542 F7
2361 D2 3560 G9
2362 E3 3561 G9
2373 C2 3563 G6
2375 D2 3564 E6
2505 G6 3570 B3
2506 G6 3601 G8
2511 E1 3602 G8
2512 E1 3603 G8
2515 G7 3604 G8
2516 E6 3605 G8
2517 G6 3606 G8
2518 E7 3607 G8
2519 G7 3608 E9
2520 E7 3609 D3
2521 G6 3610 D3
2522 F6 3611 D3
2524 G8 3612 C3
2527 G6 3613 C3
2528 G8 3614 C3
2529 G7 3615 D3
2530 E7 3616 C3
2531 G7 3617 C8
2532 E7 3618 C8
2533 G7 3619 C8
2534 E7 3620 C8
2535 G7 3621 E7
2536 E7 3622 E7
2543 E2 3624 E7
2546 C3 3625 E7
2547 E8 3626 E7
2548 E7 3627 E7
2560 E7 3628 E7
2561 E6 3629 E7
2563 E6 3630 C8
2564 G9 3631 C8
2567 G2 3632 C8
2568 G1 3633 C8
2602 G8 3634 G8
2603 G6 3635 G8
2604 G6 3636 G8
2605 G5 4201 C3
2606 G5 4202 C3
2607 G5 4215 C7
2608 E3 4216 B3
2611 D3 4501 C8
2612 D3 4508 A9
2614 E5 4509 A9
2616 E5 4514 E8
2617 E5 4515 C8
2664 C8 4516 C8
2665 C8 4517 C8
2666 E7 4518 G7
3222 B3 4519 G7
3225 B3 4520 G7
3226 B3 4521 E8
3240 B2 4522 E8
3242 B3 4523 E8
3243 B2 4524 E7
3244 B2 4525 E7
3245 B3 4526 H7
3246 B3 4527 H6
3247 B3 4528 G6
3248 B3 4529 G6
3249 B3 4530 E6
3250 E7 4531 G6
3361 D3 4532 G6
3362 E3 4533 G6
3363 E3 4534 G6
3364 E3 4535 G6
3365 D2 4536 E6
3366 E2 4537 E6
3367 E2 4538 E6
3368 E2 4539 E6
3369 D2 4540 E6
3370 E3 4542 C3
3371 D2 4543 C3
3372 D2 4544 C3
3376 C2 4546 D3
3377 C2 4547 D3
3378 C2 4548 D3
3379 C2 4552 C8
3384 C2 4554 E7
3385 C2 4555 C8
3386 C2 4556 C8
3387 C2 4557 C8
3388 C3 4558 E8
3389 C3 4559 E8
3390 C3 4560 E8
3392 C2 4561 E8
3501 G6 4562 E8
3502 G6 4563 E8
3503 G6 4564 C8
3504 F6 4572 A7
3505 F6 4573 A8
3506 G6 4574 A8
3507 G6 4575 C8
3508 G7 4576 E7
3509 F7 4577 E7
3510 E7 4588 E7
3511 E8 7219 C3
3512 E8 7303 C2
3513 E8 7304 C2
3514 E8 7501 F7
3515 E8 7502 F8
3516 E8 7600 E8
3517 D1 7601 G8
3518 D1 7602 G8
3519 D1 7603 D3
3520 D1 7604 D3
3521 D1 7605 E7
3522 E8 7606 E8
3523 E8 7607 E8
3524 E8 7608 D4
3525 G6 7609 C8
3531 G7
3532 F7
3533 F7
3534 F7
3535 G7
3536 F7
3537 G7
3538 F7

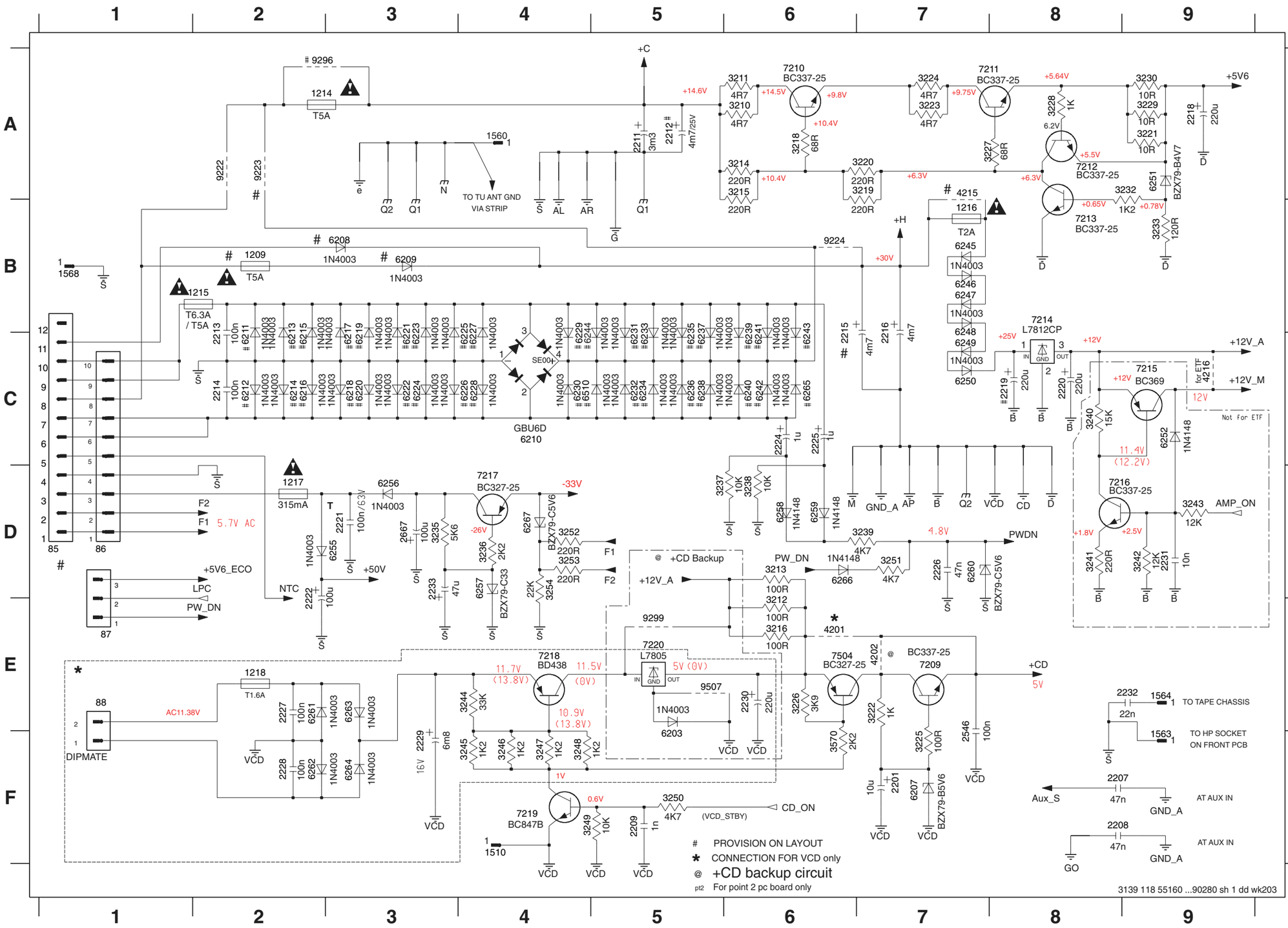
11-3

COMPONENT LAYOUT - MAIN PART (excluding the Tuner portion)


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
ATTENTION: POUR PROTECTION CONTRE INCENDIE, RECHANGEZ LE FUSIBLE SEULEMENT PAR LE MEME TYPE:FUSIBLE TR 5,LENT,125V MIN.
1209 1214 UL,T5A L 250V IEC,T5A L 250V
1215 UL,T6.3A L 250V IEC,T5A L 250V
1218 UL,T1.6A L 250V IEC,T1.6A L 250V
UL,T315mA L 250V IEC,T315mA L 250V
CAUTION:
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE WITH SAME TYPE : TR5 , SLOW BLOW,125V MIN.FUSE REFER REPLACEMENT TO QUALIFIED SERVICE PERSONNEL
UL,T2A L 250V IEC,T2A L 250V
POINT 2
8239_210_90280
For Information on this Tuner portion please refer:
Page 11-8 for Non-Cenelec Tuner
Page 11-10 for Cenelec Tuner
3139 118 3462pt2 / 3463pt2 ...90280 dd wk151

11-4

POWER SUPPLY CIRCUIT

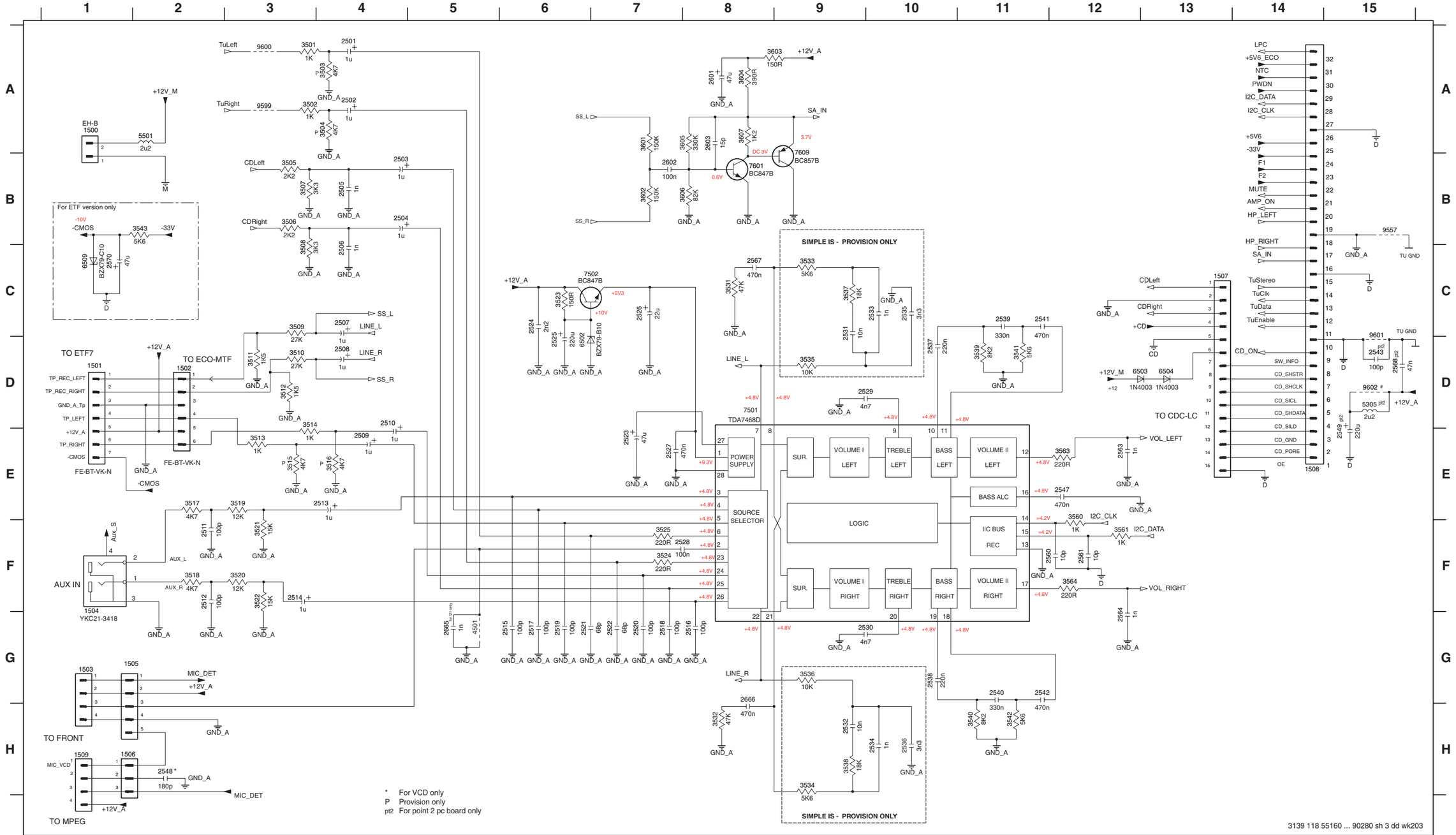


85 D1	3252 D4	9222 A2
86 D1	3253 D4	9223 A2
87 E1	3254 D4	9224 B6
88 E1	3570 F6	9296 A2
1209 B2	4201 E6	9299 E5
1214 A2	4202 E7	9507 E5
1215 B2	4215 A7	
1216 B7	4216 C9	
1217 D2	6203 E5	
1218 E2	6207 F7	
1510 F4	6208 B3	
1560 A4	6209 B3	
1563 F9	6210 C4	
1564 E9	6211 C2	
1568 B1	6212 C2	
2201 F7	6213 C2	
2207 F8	6214 C2	
2208 F8	6215 C2	
2209 F5	6216 C2	
2211 A5	6217 C3	
2212 A5	6218 C3	
2213 C2	6219 C3	
2214 C2	6220 C3	
2215 C6	6221 C3	
2216 C7	6222 C3	
2218 A9	6223 C3	
2219 C8	6224 C3	
2220 C8	6225 C4	
2221 D3	6226 C4	
2222 E2	6227 C4	
2224 C6	6228 C4	
2225 C6	6229 C4	
2226 D7	6230 C4	
2227 E2	6231 C5	
2228 F2	6232 C5	
2229 F3	6233 C5	
2230 E6	6234 C5	
2231 D9	6235 C5	
2232 E9	6236 C5	
	6237 C5	
2233 D3	6238 C5	
2546 F7	6239 C6	
2667 D3	6240 C6	
3210 A6	6241 C6	
3211 A6	6242 C6	
3212 E6	6243 C6	
3213 D6	6244 C4	
3214 A6	6245 B7	
3215 A6	6246 B7	
3216 E6	6247 B7	
3218 A6	6248 B7	
3219 A7	6249 C7	
3220 A7	6250 C7	
3221 A9	6251 A9	
3222 E7	6252 C9	
3223 A7	6255 D3	
3224 A7	6256 D3	
3225 F7	6257 D4	
3226 E6	6258 D6	
3227 A8	6259 D6	
3228 A8	6260 D7	
3229 A9	6261 E2	
3230 A9	6262 F2	
3232 A9	6263 E3	
3233 B9	6264 F3	
3235 D3	6265 C6	
3236 D4	6266 D6	
3237 D5	6267 D4	
3238 D6	6510 C4	
3239 D7	7209 E7	
3240 C8	7210 A6	
3241 D8	7211 A7	
3242 D9	7212 A8	
3243 D9	7213 B8	
3244 E4	7214 B8	
3245 F4	7215 C9	
3246 F4	7216 D8	
3247 F4	7217 D4	
3248 F4	7218 E4	
3249 F4	7219 F4	
3250 F5	7220 E5	
3251 D7	7504 E6	

11-5

SOURCE SELECTION CIRCUIT

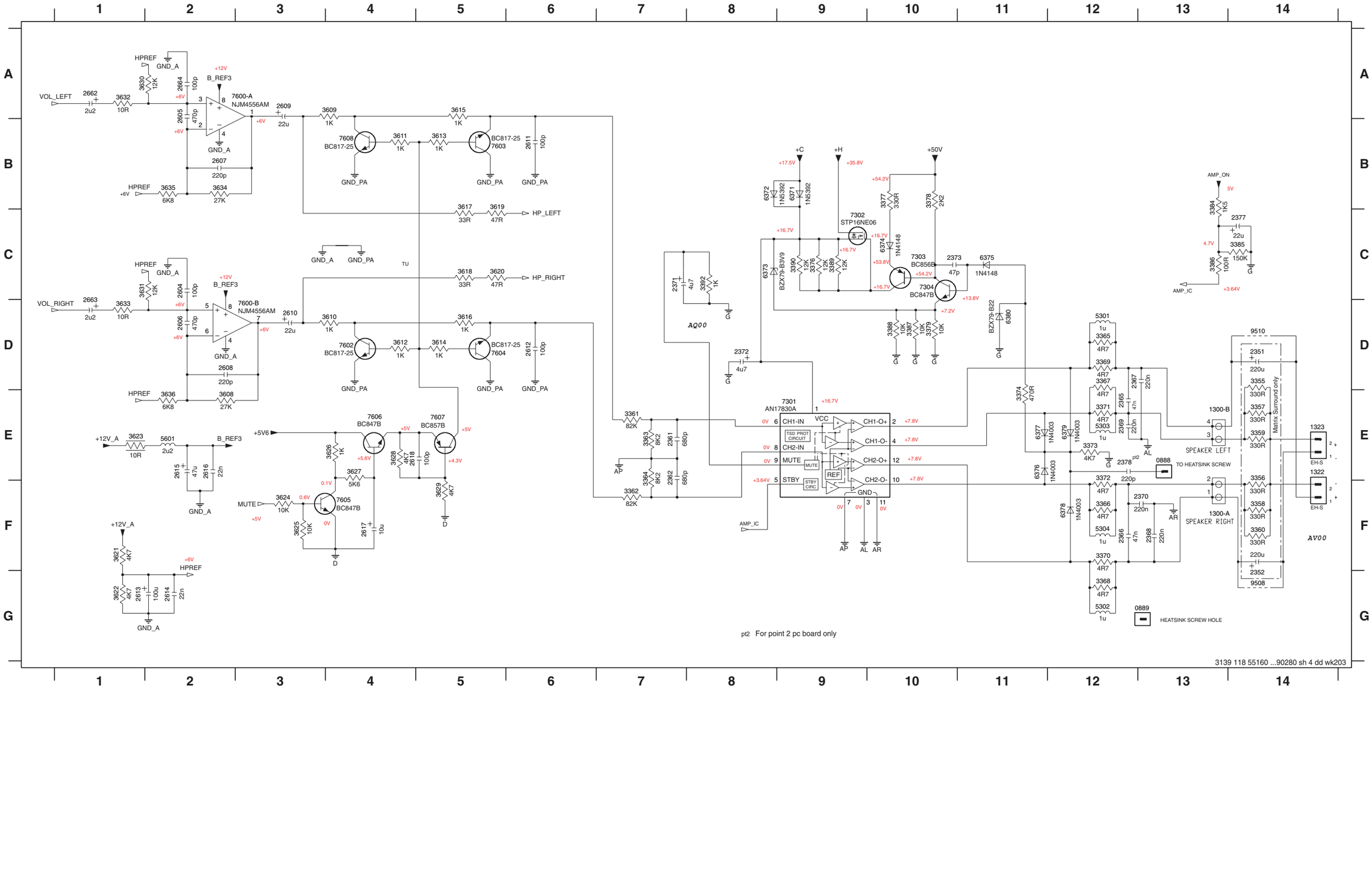
C3 E15 C4 E15 C5 D15 C6 C15 C7 C15 C8 C15 | C10 C14 C11 A3 C13 A3 C14 C15 T_E D14 1500 A1 | 1501 D1 1502 D2 1503 G1 1504 F1 1505 G2 1506 H1 | 1507 C13 1508 E14 1509 H1 2501 A4 2502 A4 2503 B4 | 2504 B4 2505 B4 2506 C4 2507 C4 2508 D4 2509 E4 | 2510 D4 2511 F2 2512 F2 2513 E4 2514 F3 2515 G6 | 2516 G8 2517 G6 2518 G7 2519 G6 2520 G7 2521 G6 | 2522 G7 2523 E7 2524 C6 2525 D6 2526 C7 2527 E7 | 2528 F7 2529 D9 2530 G9 2531 C9 2532 H9 2533 C10 | 2534 H10 2535 C10 2536 H10 2537 D10 2538 G10 2539 C11 | 2540 G11 2541 C11 2542 G11 2543 D15 2547 E12 2548 H2 | 2549 E15 2560 F12 2561 F12 2563 E12 2564 G12 2567 C8 | 2568 D15 2570 C1 2601 A8 2602 B7 2603 A8 | 2665 G5 2666 G8 3501 A3 3502 A3 3503 A4 3504 A4 | 3505 B3 3506 B3 3507 B3 3508 C3 3509 C3 3510 D3 | 3511 D3 3512 D3 3513 E3 3514 D3 3515 E3 3516 E4 | 3517 E2 3518 F2 3519 E3 3520 F3 3521 F3 3522 F3 | 3523 C6 3524 F7 3525 F7 3531 C8 3532 H8 3533 C9 | 3534 H9 3535 D9 3536 G9 3537 C9 3538 H9 3539 D11 | 3540 H11 3541 D11 3542 H11 3543 B2 3560 E12 3561 F12 | 3563 E12 3564 F12 3601 A7 3602 B7 3603 A9 3604 A8 | 3605 A8 3606 B8 3607 A8 4501 G5 5305 D15 5501 A2 | 6502 D6 6503 D12 6504 D13 6509 C1 7501 D8 7502 C7 | 7601 B8 7609 B9 9557 B15 9599 A3 9600 A3 9601 D15 | 9602 D15 9603 E15 TU_LEFT A3 T_E1 D14



11-6

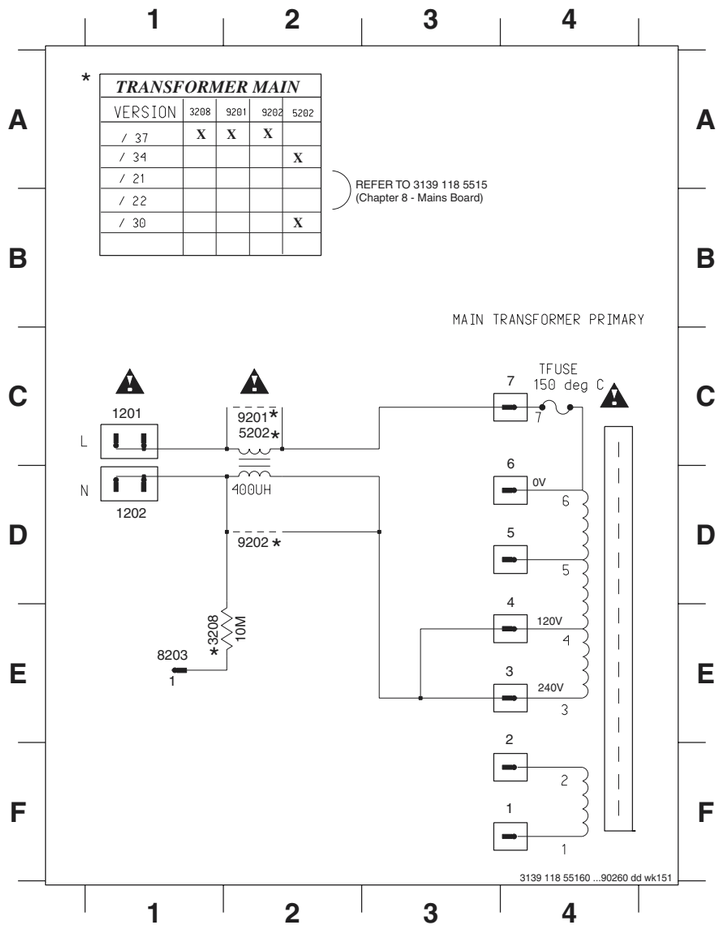
PRE- & POWER AMPLIFIER CIRCUIT

0888 E13 0889 G13 1300-A F13 1300-B E13 1322 E14 1323 E14 2351 D14 2352 F14 2361 E7 2362 E7 2365 E12 2366 F12 2367 D12 2368 F13 2369 E12 2370 F13 2371 C7 2372 D8 2373 C10 2377 C14 2378 E12 2604 C2 2605 A2 2606 D2 2607 B2 2608 D2 2609 A3 2610 D3 2611 B6 2612 D6 2613 G1 2614 G2 2615 E2 2616 E2 2617 F4 2618 E4 2662 A1 2663 D1 3355 D14 3356 E14 3357 E14 3358 F14 3359 E14 3360 F14 3361 E7 3362 F7 3363 E7 3364 E7 3365 D12 3366 F12 3367 D12 3368 G12 3369 D12 3370 F12 3371 E12 3372 E12 3373 E12 3374 E11 3376 C9 3377 B10 3378 B10 3379 D10 3384 B13 3385 C14 3386 C13 3387 D10 3388 D10 3389 C9 3390 C9 3392 C8 3608 E2 3609 A4 3610 D4 3611 B5 3612 D5 3613 A5 3614 D5 3615 A5 3616 D5 3617 B5 3618 C5 3619 B5 3620 C5 3621 F1 3622 G4 3623 E1 3624 F3 3625 F3 3626 E4 3627 E4 3628 E4 3629 F5 3630 A1 3631 C1 3632 A1 3633 D1 3634 B2 3635 B2 3636 E2 5301 D12 5302 G12 5303 E12 5304 F12 5601 E2 6371 B9 6372 B8 6373 C8 6374 C10 6375 C11 6376 E11 6377 E11 6378 F12 6379 E12 6380 D11 7300-A A2 7301 E9 7302 C9 7303 C10 7304 C10 7305 D5 7600-A F4 7600-B D3 7602 D4 7603 B5 7604 B5 7605 F4 7606 E4 7607 E5 7608 B4 9508 G14 9510 D14

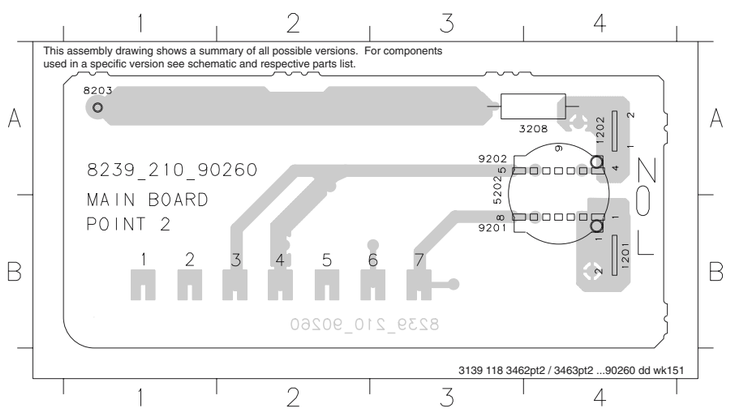


TRANSFORMER PRIMARY PART - CIRCUIT & LAYOUT (except /21/22 version)

1 F4 3 E4 5 D4 7 C4 1202 D1 5202 C2 9201 C2
2 E4 4 D4 6 C4 1201 C1 3208 E1 8203 E1 9202 D2

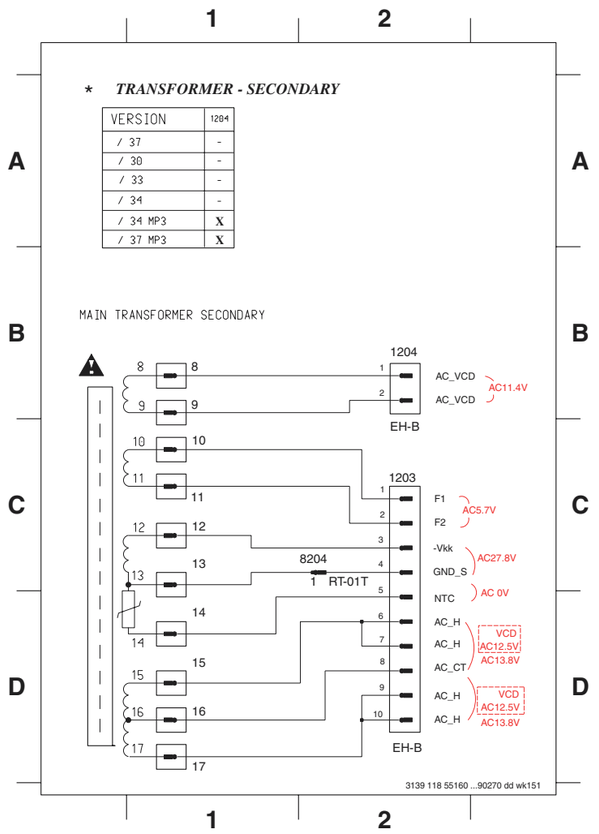


1 B1 3 B2 5 B2 7 B3 1202 A4 5202 A3 9201 B3
2 B1 4 B2 6 B3 1201 B4 3208 A4 8203 A1 9202 A3

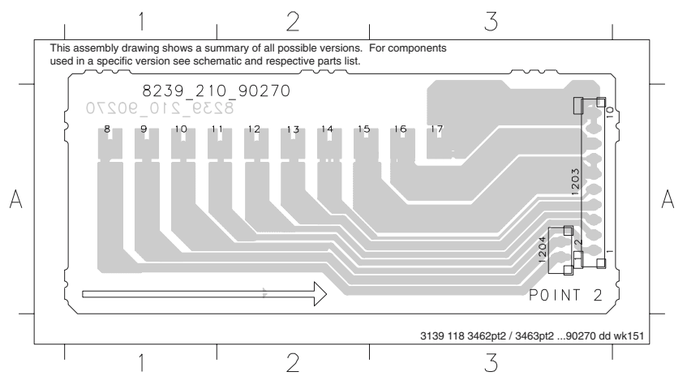


TRANSFORMER SECONDARY PART - CIRCUIT & LAYOUT (except /21/22 version)

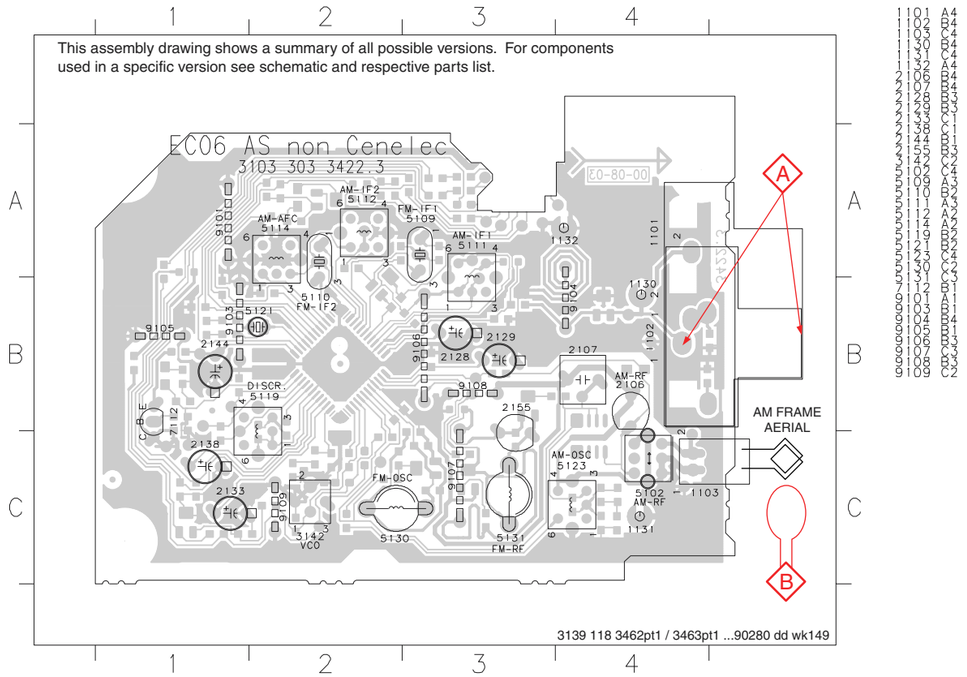
8 B1 10 C1 12 C1 14 D1 16 D1 1203 C2 8204 C2
9 B1 11 C1 13 C1 15 D1 17 D1 1204 B2

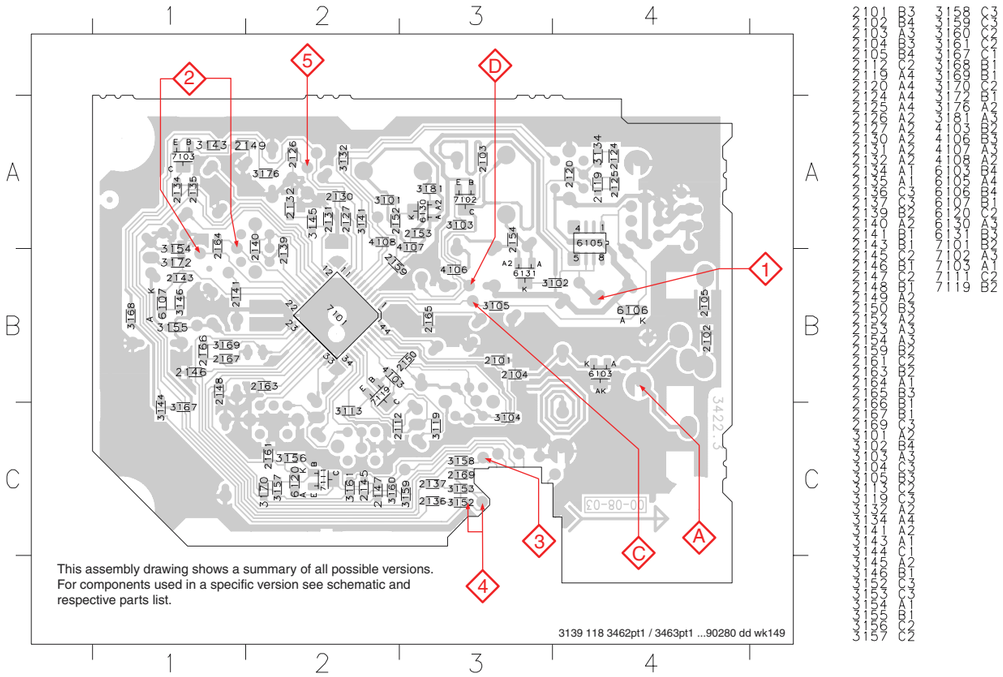


8 A1 10 A1 12 A2 14 A2 16 A3 1203 A3
9 A1 11 A1 13 A2 15 A2 17 A3 1204 A3


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
8239_210_90270
8 9 10 11 12 13 14 15 16 17
1203
1204
POINT 2
3139 118 3462pt2 / 3463pt2 ...90270 dd wk151

NON-CENELEC TUNER PORTION - COMPONENT & CHIP LAYOUTS




This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
3139 118 3462pt1 / 3463pt1 ...90280 dd wk149

Note: This layout drawings are applicable for both pt 1 and pt 2 pc board.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	IC 7101 pin 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 pin 36 220R 100nF	5111	5	max. f_o symmetric
			IC 7101 pin 40 220R 100nF see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

11-9

NON-CENELEC TUNER CIRCUIT

TUNER BOARD ECO6 / SYSTEMS NON CENELEC

VERSION PROGRAMMING COMPONETS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	X				
/00 /02 FM/MW		X	X		X
/01 FM/MW		X	X		X
/14 FM-OIRT/MW	X				
/17 FM/AM	X				
/06 FM-Japan/AM		X	X	X	X

X component mounted

LEGEND

* ... only assembled in FM/AM-version
p ...for provision only
USA ... for USA version only
E_EU ... for East European version only
J ... Japan version only

EVM ...V FM mode stereo ...V MW mode

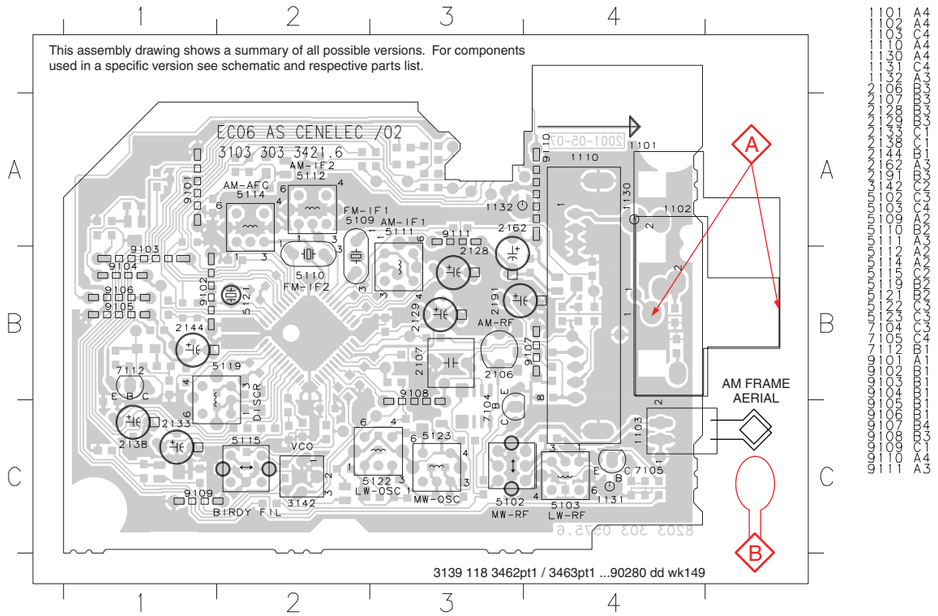
voltages measured while set is tuned to a strong transmitter

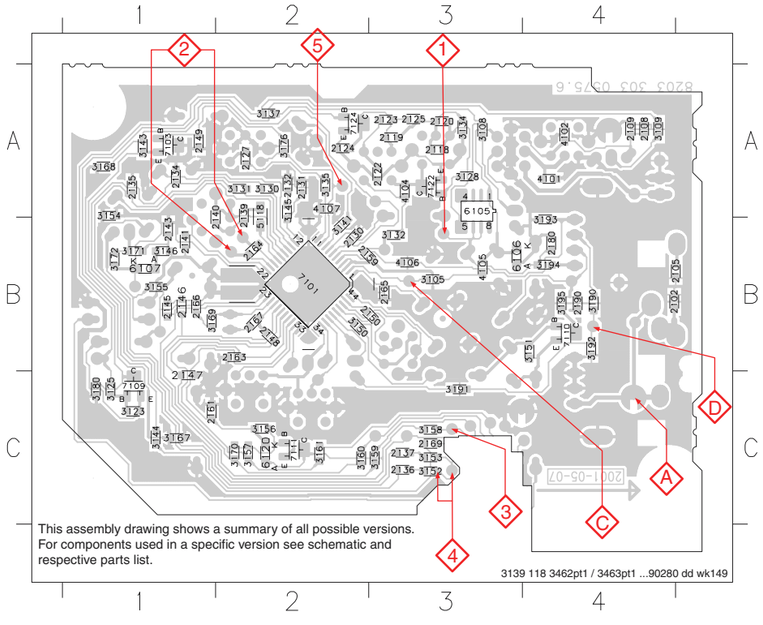
ORIGINAL SCHEMATIC FROM ICAP VIENNA
REFER TO 3103 308 6426

3139 118 55160 ...91060 dd wk203

c1 E14 5119 G9
c2 F14 5121 E11
c3 F14 5123 G5
c4 F14 5130 E5
c5 F14 5131 C6
c6 F14 6103 B2
c8 F14 6105-1 F3
c9 F14 6105-2 G6
c10 H8 6106 C3
c11 F14 6107 G13
c12 F14 6120 C13
1101 A1 6130 E5
1102 B1 6131 D5
1103 F2 7101 C8
1130 A2 7102 C6
1131 B2 7103 H7
1132 G13 7111 C13
2101 B3 7112 G12
2102 B1 7119 B9
2103 C7
2104 B3
2105 A2
2106 F3
2107 F4
2112 B9
2119 H6
2120 G6
2124 H6
2125 H6
2126 F7
2127 F7
2128 B8
2129 C7
2130 F11
2131 G8
2132 G8
2133 G8
2134 H8
2135 H9
2136 G14
2137 G13
2138 F9
2139 G9
2140 G9
2141 F10
2143 G12
2144 G11
2145 F12
2146 E12
2147 E12
2148 E12
2149 H7
2150 A10
2152 E4
2153 E5
2154 D5
2155 D6
2159 F6
2161 C11
2163 D11
2164 F10
2165 C7
2166 E12
2167 E12
2169 H8
3101 E4
3102 D4
3103 C6
3104 A7
3105 B6
3113 B9
3119 A9
3132 G5
3134 H6
3141 F7
3142 E7
3143 G7
3144 H8
3145 F8
3146 G13
3152 G14
3153 G13
3154 G13
3155 G11
3156 C12
3157 C12
3158 E13
3159 D13
3160 D12
3161 D13
3167 F12
3168 F11
3169 E11
3170 C12
3172 G12
3176 G7
3181 E6
4103 A9
5102 F2
5109 A9
5110 B10
5111 A8
5112 A11
5114 B11

CENELEC TUNER PORTION - COMPONENT & CHIP LAYOUTS


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
ECO6 AS CENELEC /02
3103 303 3421.6
AM FRAME AERIAL
3139 118 3462pt1 / 3463pt1 ...90280 dd wk149


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
3139 118 3462pt1 / 3463pt1 ...90280 dd wk149

TUNER ADJUSTMENT TABLE (**ECO6 Cenelec** FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	◇1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	◇D	IC 7101 pin 21, shortcircuit to block AFC, 2141	5119	◇2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	◇A	98MHz	IF coil inside FM frontend 1110	◇4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 pin 36, 100nF, 220R	5111	◇5	max., f_o, symmetric
			see remark [2], IC 7101 pin 40, 100nF, 220R	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0mV ±2mV
AM RF [3]						
MW	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max., f_o, symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[2] RC network serves for damping the IF-filter while adjusting the other one.

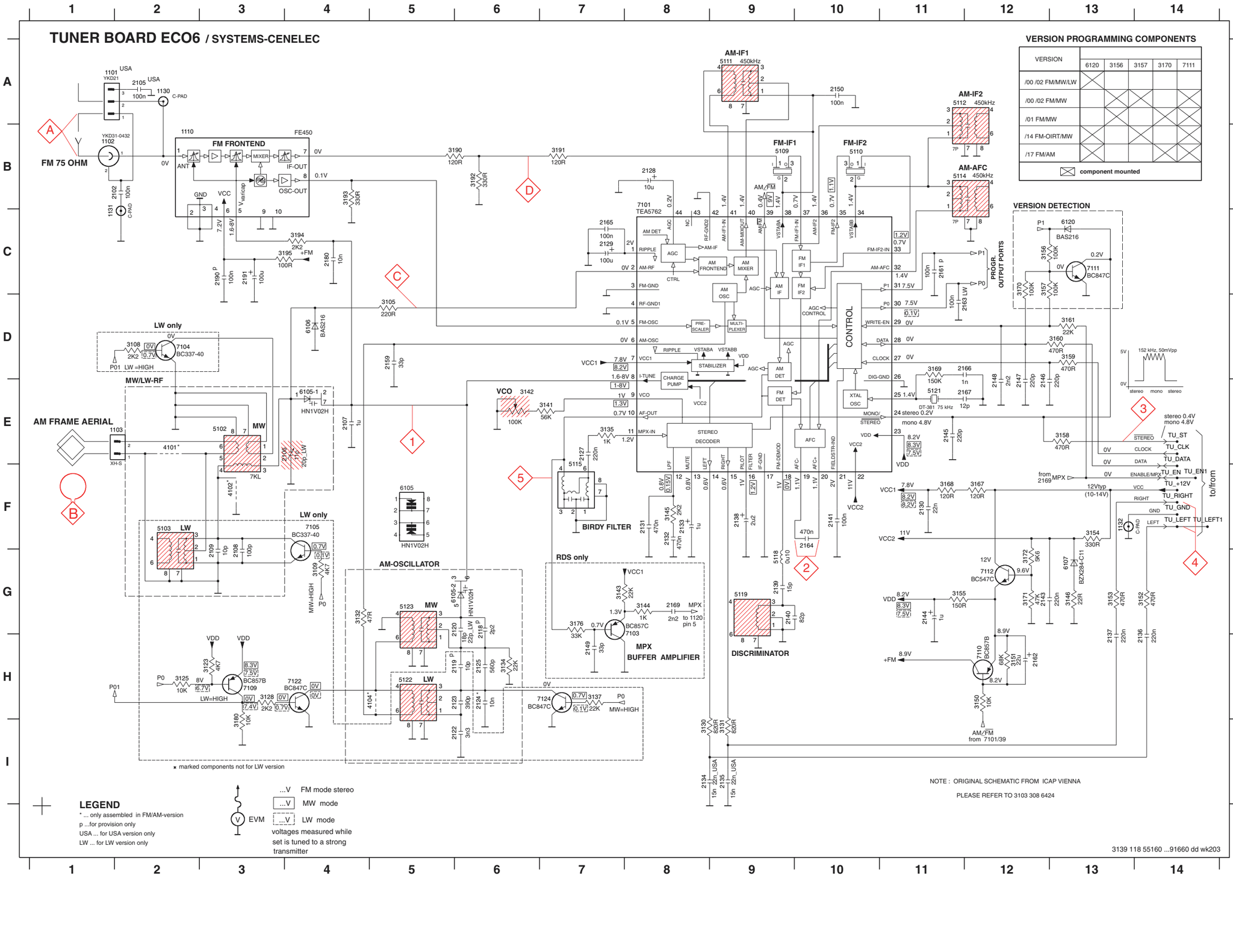
[3] For AM RF adjustments the original frame antenna has to be used! MW has to be aligned before LW.

↕ Repeat

11-11

CENELEC TUNER CIRCUIT

TUNER BOARD ECO6 / SYSTEMS-CENELEC



VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒	☒	☒
/01 FM/MW		☒	☒	☒	☒
/14 FM-OIRT/MW	☒				
/17 FM/AM	☒				

☒ component mounted

AM G13
FM G13
1101 A2
1102 B1
1103 E2
1110 B2
1130 A2
1131 C1
1132 F13
2102 B2
2105 A2
2106 E3
2107 E4
2108 G3
2109 G3
2118 G6
2119 H6
2120 G6
2122 I6
2123 H6
2124 H6
2125 H6
2127 E7
2128 B8
2129 C7
2130 F11
2131 F8
2132 F8
2133 F8
2134 I8
2135 I9
2136 H14
2137 H13
2138 F9
2139 G9
2140 G9
2141 F10
2143 G12
2144 G11
2145 E11
2146 E12
2147 E12
2148 E12
2149 H7
2150 A10
2159 D5
2161 C11
2162 H12
2163 D11
2164 F10
2165 C7
2166 D12
2167 E12
2169 G8
2180 C4
2190 C3
2191 C3
3105 D5
3108 D2
3109 G4
3123 H3
3125 H2
3128 H3
3130 I8
3131 I9
3132 G4
3134 H6
3135 E7
3137 H7
3141 E7
3142 E6
3143 G7
3144 G8
3145 F8
3146 G13
3150 H12
3151 H12
3152 G14
3153 G13
3154 F13
3155 G11
3156 C12
3157 C12
3158 E13
3159 D13
3160 D13
3161 D13
3167 F12
3168 F11
3169 D11
3170 C12
3171 G12
3172 G12
3176 G7
3180 I3
3190 B6
3191 B7
3192 B6
3193 B4
3194 C4
3195 C4
4101 E2
4102 F3
4104 H5
5102 E3
5103 F2
5109 B9
5110 B10
5111 A9
5112 A11
5114 B11
5115 F7
5118 G9
5119 G9
5121 E11
5122 H5
5123 G5
6105-1 E4
6105-2 G6
6106 D4
6107 G13
6120 C13
7101 B8
7103 G8
7104 D2
7105 F4
7109 H3
7110 H12
7111 C13
7112 G12
7122 H4
7124 H7
+12V F14
TU_CLK E14
TU_DATA E14
TU_EN F14
TU_EN1 F14
TU_GND F14
TU_LEFT F14
TU_LEFT1 F14
TU_RIGHT F14
TU_ST E14

11-12

ELECTRICAL PARTS LIST - COMBI BOARD (excluding Tuner portion)

ELECTRICAL PARTS LIST - COMBI BOARD (excluding Tuner portion)

MISCELLANEOUS

1214	4822 071 55002	Fuse T5A 250V	/34
1215	4822 071 55002	Fuse T5A 250V	
1216	9965 000 07788	Fuse T2A 250V	
1217	4822 071 53151	Fuse T315mA 250V	
1300	4822 267 31176	Loudspeaker Socket 4P	
1501	4822 267 10953	Flex Socket 7pin Vert.	
1503	4822 267 10733	Flex Socket 4pin Vert.	/21
1504	4822 265 20553	Cinch Socket, Aux-in	
1507	4822 265 10981	Flex Socket 15pin Vert.	
1508	2422 025 17411	Flex Socket 30pin Vert.	/21/34
1508	2422 025 17412	Flex Socket 32pin Vert.	/22

CAPACITORS

2201	4822 124 40248	10µF 20% 63V	
2207	4822 121 43526	47nF 5% 250V	/21/34
2208	3198 017 34730	47nF 16V	/21/34
2209	5322 126 11578	1nF 10% 50V	/21/34
2211	4822 124 42367	3300µF 20% 35V	
2213	5322 121 42386	100nF 5% 63V	
2214	5322 121 42386	100nF 5% 63V	
2216	4822 124 80415	4700µF 20% 50V	
2218	4822 124 80144	220µF 20% 25V	
2220	4822 124 80144	220µF 20% 25V	
2221	5322 121 42386	100nF 5% 63V	
2222	2020 012 93547	100µF 20% 63V	
2224	4822 124 21913	1µF 20% 63V	
2225	4822 124 21913	1µF 20% 63V	
2226	4822 121 43526	47nF 5% 250V	
2232	4822 126 14494	22nF 10% 25V	
2233	4822 124 41751	47µF 20% 50V	
2361	3198 016 36810	680pF 25V	
2362	3198 016 36810	680pF 25V	
2365	4822 121 43526	47nF 5% 250V	
2366	4822 121 43526	47nF 5% 250V	
2367	4822 121 42408	220nF 5% 63V	
2368	4822 121 42408	220nF 5% 63V	
2369	4822 121 42408	220nF 5% 63V	
2370	4822 121 42408	220nF 5% 63V	
2371	4822 124 40769	4,7µF 20% 100V	
2372	4822 124 40769	4,7µF 20% 100V	
2373	4822 122 33777	47pF 5% 63V	
2377	4822 124 81151	22µF 50V	
2378	4822 126 13883	220pF 5% 50V	
2501	4822 124 22466	1µF 20% 50V	
2502	4822 124 22466	1µF 20% 50V	
2503	4822 124 22466	1µF 20% 50V	
2504	4822 124 22466	1µF 20% 50V	
2505	3198 016 31020	1nF 25V	
2506	3198 016 31020	1nF 25V	
2507	4822 124 22466	1µF 20% 50V	
2508	4822 124 22466	1µF 20% 50V	
2509	4822 124 22466	1µF 20% 50V	
2510	4822 124 22466	1µF 20% 50V	
2511	4822 122 31765	100pF 2% 63V	
2512	4822 122 31765	100pF 2% 63V	
2513	4822 124 22466	1µF 20% 50V	
2514	4822 124 22466	1µF 20% 50V	
2515	4822 122 31765	100pF 2% 63V	
2516	4822 122 31765	100pF 2% 63V	
2517	4822 122 31765	100pF 2% 63V	
2518	4822 122 31765	100pF 2% 63V	
2519	4822 122 31765	100pF 2% 63V	
2520	4822 122 31765	100pF 2% 63V	
2521	4822 126 13956	68pF 5% 63V	
2522	4822 126 13956	68pF 5% 63V	
2523	4822 124 40433	47µF 20% 25V	
2524	4822 126 14238	2,2nF 50V	
2525	4822 124 40196	220µF 20% 16V	
2526	4822 124 81151	22µF 50V	
2527	3198 017 44740	470nF 10V	
2528	2238 586 59812	100nF +80/-20% 50V	
2529	4822 126 13193	4,7nF 10% 63V	
2530	4822 126 13193	4,7nF 10% 63V	
2537	4822 121 42408	220nF 5% 63V	
2538	4822 121 42408	220nF 5% 63V	
2539	5322 121 42661	330nF 5% 63V	
2540	5322 121 42661	330nF 5% 63V	
2541	4822 121 51252	470nF 5% 63V	
2542	4822 121 51252	470nF 5% 63V	
2543	4822 122 31765	100pF 2% 63V	
2546	2238 586 59812	100nF +80/-20% 50V	
2547	3198 017 44740	470nF 10V	
2549	4822 124 80144	220µF 20% 25V	
2560	4822 122 33741	10pF 10% 50V	
2561	4822 122 33741	10pF 10% 50V	
2563	3198 016 31020	1nF 25V	
2564	3198 016 31020	1nF 25V	
2567	3198 017 44740	470nF 10V	
2568	3198 017 34730	47nF 16V	
2570	4822 124 40433	47µF 20% 25V	
2601	4822 124 40433	47µF 20% 25V	
2602	2238 586 59812	100nF +80/-20% 50V	
2603	4822 122 33752	15pF 5% 50V	
2604	4822 122 31765	100pF 2% 63V	
2605	4822 126 13881	470pF 5% 50V	
2606	4822 126 13881	470pF 5% 50V	
2607	4822 126 13883	220pF 5% 50V	
2608	4822 126 13883	220pF 5% 50V	
2609	4822 124 81151	22µF 50V	
2610	4822 124 81151	22µF 50V	
2611	4822 122 31765	100pF 2% 63V	
2612	4822 122 31765	100pF 2% 63V	
2613	4822 124 41584	100µF 20% 10V	
2614	4822 126 14494	22nF 10% 25V	
2615	4822 124 41751	47µF 20% 50V	
2616	4822 126 14494	22nF 10% 25V	
2617	4822 124 40248	10µF 20% 63V	
2618	4822 122 31765	100pF 2% 63V	
2662	4822 124 22652	2,2µF 20% 50V	
2663	4822 124 22652	2,2µF 20% 50V	
2664	4822 122 31765	100pF 2% 63V	
2665	5322 126 11578	1nF 10% 50V	/21
2666	3198 017 44740	470nF 10V	
2667	2020 012 93547	100µF 20% 63V	

RESISTORS

3210	4822 050 24708	4R7 1% 0,6W	
3211	4822 050 24708	4R7 1% 0,6W	
3212	4822 116 52175	100R 5% 0,5W	
3213	4822 116 52175	100R 5% 0,5W	
3214	4822 116 83872	220R 5% 0,5W	
3215	4822 116 83872	220R 5% 0,5W	
3216	4822 116 52175	100R 5% 0,5W	
3218	4822 116 52199	68R 5% 0,5W	
3219	4822 116 83872	220R 5% 0,5W	
3220	4822 116 83872	220R 5% 0,5W	
3221	4822 116 52176	10R 5% 0,5W	
3222	4822 051 30102	1k 5% 0,062W	
3223	4822 050 24708	4R7 1% 0,6W	
3224	4822 050 24708	4R7 1% 0,6W	
3225	4822 051 30101	100R 5% 0,062W	
3226	4822 051 30392	3k9 5% 0,063W	
3227	4822 116 52199	68R 5% 0,5W	
3228	4822 050 11002	1k 1% 0,4W	
3229	4822 116 52176	10R 5% 0,5W	
3230	4822 116 52176	10R 5% 0,5W	
3232	4822 116 52207	1k2 5% 0,5W	
3233	4822 116 52206	120R 5% 0,5W	
3235	4822 116 52289	5k6 5% 0,5W	
3236	4822 116 52256	2k2 5% 0,5W	
3237	4822 050 21003	10k 1% 0,6W	
3238	4822 050 21003	10k 1% 0,6W	
3239	4822 116 52283	4k7 5% 0,5W	
3249	4822 051 30103	10k 5% 0,062W	
3250	4822 051 30472	4k7 5% 0,062W	
3251	4822 116 52283	4k7 5% 0,5W	/22
3252	4822 116 83872	220R 5% 0,5W	
3253	4822 116 83872	220R 5% 0,5W	
3254	4822 116 52257	22k 5% 0,5W	
3361	4822 117 12864	82k 5% 0,6W	
3362	4822 117 12864	82k 5% 0,6W	
3363	4822 117 12902	8k2 1% 0,063W	
3364	4822 117 12902	8k2 1% 0,063W	
3365	4822 117 13608	4R7 5% 0,062W	
3366	4822 117 13608	4R7 5% 0,062W	
3367	4822 117 13608	4R7 5% 0,062W	
3368	4822 117 13608	4R7 5% 0,062W	
3369	4822 117 13608	4R7 5% 0,062W	
3370	4822 117 13608	4R7 5% 0,062W	
3371	4822 117 13608	4R7 5% 0,062W	
3372	4822 117 13608	4R7 5% 0,062W	
3373	4822 116 52283	4k7 5% 0,5W	
3374	4822 116 83883	470R 5% 0,5W	
3376	4822 051 30123	12k 5% 0,062W	
3377	4822 051 30331	330R 5% 0,062W	
3378	4822 051 30222	2k2 5% 0,062W	
3379	4822 051 30103	10k 5% 0,062W	
3384	4822 051 30152	1k5 5% 0,062W	
3385	4822 051 30154	150k 5% 0,062W	
3386	4822 051 30101	100R 5% 0,062W	
3387	4822 051 30103	10k 5% 0,062W	
3388	4822 051 30103	10k 5% 0,062W	
3389	4822 051 30123	12k 5% 0,062W	
3390	4822 051 30123	12k 5% 0,062W	
3392	4822 051 30102	1k 5% 0,062W	
3501	4822 051 30102	1k 5% 0,062W	
3502	4822 051 30102	1k 5% 0,062W	
3505	4822 051 30222	2k2 5% 0,062W	
3506	4822 051 30222	2k2 5% 0,062W	
3507	4822 051 30332	3k3 5% 0,062W	
3508	4822 051 30332	3k3 5% 0,062W	
3509	4822 051 30273	27k 5% 0,062W	
3510	4822 051 30273	27k 5% 0,062W	
3511	4822 051 30152	1k5 5% 0,062W	
3512	4822 051 30152	1k5 5% 0,062W	
3513	4822 051 30102	1k 5% 0,062W	
3514	4822 051 30102	1k 5% 0,062W	
3517	4822 051 30472	4k7 5% 0,062W	
3518	4822 051 30472	4k7 5% 0,062W	
3519	4822 051 30123	12k 5% 0,062W	
3520	4822 051 30123	12k 5% 0,062W	
3521	4822 051 30153	15k 5% 0,062W	
3522	4822 051 30153	15k 5% 0,062W	
3523	4822 051 30151	150R 5% 0,062W	
3524	4822 051 30221	220R 5% 0,062W	
3525	4822 051 30221	220R 5% 0,062W	
3531	4822 117 12925	47k 1% 0,063W	
3532	4822 117 12925	47k 1% 0,063W	
3539	4822 117 12902	8k2 1% 0,063W	
3540	4822 117 12902	8k2 1% 0,063W	
3541	4822 051 30562	5k6 5% 0,063W	
3542	4822 051 30562	5k6 5% 0,063W	
3543	4822 116 52289	5k6 5% 0,5W	
3560	4822 051 30102	1k 5% 0,062W	
3561	4822 051 30102	1k 5% 0,062W	
3563	4822 051 30221	220R 5% 0,062W	
3564	4822 051 30221	220R 5% 0,062W	
3570	4822 051 30222	2k2 5% 0,062W	

11-13

ELECTRICAL PARTS LIST - COMBI BOARD (excluding Tuner portion)

ELECTRICAL PARTS LIST - COMBI BOARD (excluding Tuner portion)

RESISTORS

3601	4822 051 30154	150k 5% 0,062W	
3602	4822 051 30154	150k 5% 0,062W	
3603	4822 051 30151	150R 5% 0,062W	
3604	4822 051 30391	390R 5% 0,062W	
3605	4822 051 30334	330k 5% 0,062W	
3606	4822 117 12864	82k 5% 0,6W	
3607	4822 117 11817	1k2 1% 1/16W	
3608	4822 051 30273	27k 5% 0,062W	
3609	4822 051 30102	1k 5% 0,062W	
3610	4822 051 30102	1k 5% 0,062W	
3611	4822 051 30102	1k 5% 0,062W	
3612	4822 051 30102	1k 5% 0,062W	
3613	4822 051 30102	1k 5% 0,062W	
3614	4822 051 30102	1k 5% 0,062W	
3615	4822 051 30102	1k 5% 0,062W	
3616	4822 051 30102	1k 5% 0,062W	
3617	4822 051 30339	33R 5% 0,062W	
3618	4822 051 30339	33R 5% 0,062W	
3619	4822 051 30479	47R 5% 0,062W	
3620	4822 051 30479	47R 5% 0,062W	
3621	4822 051 30472	4k7 5% 0,062W	
3622	4822 051 30472	4k7 5% 0,062W	
3623	4822 052 10109	10R 5% 0,33W	
3624	4822 051 30103	10k 5% 0,062W	
3625	4822 051 30103	10k 5% 0,062W	
3626	4822 051 30102	1k 5% 0,062W	
3627	4822 051 30562	5k6 5% 0,063W	
3628	4822 051 30472	4k7 5% 0,062W	
3629	4822 051 30472	4k7 5% 0,062W	
3630	4822 051 30123	12k 5% 0,062W	
3631	4822 051 30123	12k 5% 0,062W	
3632	4822 051 30109	10R 5% 0,062W	
3633	4822 051 30109	10R 5% 0,062W	
3634	4822 051 30273	27k 5% 0,062W	
3635	4822 051 30682	6k8 5% 0,062W	
3636	4822 051 30682	6k8 5% 0,062W	
4216	4822 051 30008	0R Jumper 0603	/22
4501	4822 051 30008	0R Jumper 0603	/22/34
4508	4822 051 30008	0R Jumper 0603	
4509	4822 051 30008	0R Jumper 0603	
4514	4822 051 30008	0R Jumper 0603	
4515	4822 051 30008	0R Jumper 0603	
4516	4822 051 30008	0R Jumper 0603	
4517	4822 051 30008	0R Jumper 0603	
4518	4822 051 30008	0R Jumper 0603	
4519	4822 051 30008	0R Jumper 0603	
4520	4822 051 30008	0R Jumper 0603	
4521	4822 051 30008	0R Jumper 0603	
4522	4822 051 30008	0R Jumper 0603	
4523	4822 051 30008	0R Jumper 0603	
4524	4822 051 30008	0R Jumper 0603	
4525	4822 051 30008	0R Jumper 0603	
4526	4822 051 30008	0R Jumper 0603	
4527	4822 051 30008	0R Jumper 0603	
4528	4822 051 30008	0R Jumper 0603	
4529	4822 051 30008	0R Jumper 0603	
4530	4822 051 30008	0R Jumper 0603	
4531	4822 051 30008	0R Jumper 0603	
4532	4822 051 30008	0R Jumper 0603	
4533	4822 051 30008	0R Jumper 0603	
4534	4822 051 30008	0R Jumper 0603	
4535	4822 051 30008	0R Jumper 0603	
4536	4822 051 30008	0R Jumper 0603	
4537	4822 051 30008	0R Jumper 0603	
4538	4822 051 30008	0R Jumper 0603	
4539	4822 051 30008	0R Jumper 0603	
4540	4822 051 30008	0R Jumper 0603	
4541	4822 051 30008	0R Jumper 0603	
4542	4822 051 30008	0R Jumper 0603	
4543	4822 051 30008	0R Jumper 0603	
4544	4822 051 30008	0R Jumper 0603	
4545	4822 051 20008	0R Jumper 0805	/22
4546	4822 051 30008	0R Jumper 0603	
4547	4822 051 30008	0R Jumper 0603	
4548	4822 051 30008	0R Jumper 0603	
4549	4822 051 30008	0R Jumper 0603	
4508	4822 051 30008	0R Jumper 0603	
4550	4822 051 30008	0R Jumper 0603	/22
4551	4822 051 30008	0R Jumper 0603	/22
4553	4822 051 30008	0R Jumper 0603	
4554	4822 051 30008	0R Jumper 0603	
4555	4822 051 30008	0R Jumper 0603	
4556	4822 051 30008	0R Jumper 0603	
4557	4822 051 30008	0R Jumper 0603	
4558	4822 051 30008	0R Jumper 0603	
4559	4822 051 30008	0R Jumper 0603	
4560	4822 051 30008	0R Jumper 0603	
4561	4822 051 30008	0R Jumper 0603	
4562	4822 051 30008	0R Jumper 0603	
4563	4822 051 30008	0R Jumper 0603	
4564	4822 051 30008	0R Jumper 0603	
4567	4822 051 30008	0R Jumper 0603	
4569	4822 051 30008	0R Jumper 0603	
4572	4822 051 30008	0R Jumper 0603	
4573	4822 051 30008	0R Jumper 0603	
4574	4822 051 30008	0R Jumper 0603	
4575	4822 051 30008	0R Jumper 0603	
4576	4822 051 30008	0R Jumper 0603	
4578	4822 051 30008	0R Jumper 0603	
4588	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5202	4822 157 11832	Mains Filter 100µH 3A	/34
5301	4822 157 62255	Coil 1µH 18,5 Turns	
5302	4822 157 62255	Coil 1µH 18,5 Turns	
5303	4822 157 62255	Coil 1µH 18,5 Turns	
5304	4822 157 62255	Coil 1µH 18,5 Turns	
5305	4822 157 62552	Coil 2,2µH 5%	
5501	4822 157 62552	Coil 2,2µH 5%	
5601	4822 157 62552	Coil 2,2µH 5%	

DIODES

6207	4822 130 34173	BZX79-B5V6	
6210	4822 130 10944	GBU6D	
6245	4822 130 31878	1N4003G	
6246	4822 130 31878	1N4003G	
6247	4822 130 31878	1N4003G	
6248	4822 130 31878	1N4003G	
6249	4822 130 31878	1N4003G	
6250	4822 130 31878	1N4003G	
6251	4822 130 34174	BZX79-B4V7	
6255	4822 130 31878	1N4003G	
6256	4822 130 31878	1N4003G	
6257	4822 130 34142	BZX79-B33	
6258	4822 130 30621	1N4148	
6259	4822 130 30621	1N4148	
6260	4822 130 34173	BZX79-B5V6	
6266	4822 130 30621	1N4148	/22
6267	4822 130 34173	BZX79-B5V6	
6371	4822 130 31878	1N4003G	
6372	4822 130 31878	1N4003G	
6373	3198 010 53980	BZX79-B3V9	
6374	4822 130 30621	1N4148	
6375	4822 130 30621	1N4148	
6376	4822 130 31878	1N4003G	
6377	4822 130 31878	1N4003G	
6378	4822 130 31878	1N4003G	
6379	4822 130 31878	1N4003G	
6380	3198 010 52290	BZX79-B22	
6502	4822 130 61219	BZX79-B10	
6503	4822 130 31878	1N4003G	
6504	4822 130 31878	1N4003G	
6509	4822 130 61219	BZX79-B10	

TRANSISTORS & INTEGRATED CIRCUITS

7209	4822 130 40981	BC337-25	
7210	4822 130 40981	BC337-25	
7211	4822 130 40981	BC337-25	
7212	4822 130 40981	BC337-25	
7213	4822 130 40981	BC337-25	
7214	4822 209 33575	L7812CP	
7217	4822 130 41246	BC327-25	
7219	4822 130 60511	BC847B	
7301	9322 174 32682	AN17830A	
7302	4822 130 11578	STP16NE06	
7303	4822 130 60373	BC856B	
7304	4822 130 60511	BC847B	
7501	9322 150 74668	TDA7468D	
7502	4822 130 60511	BC847B	
7504	4822 130 41246	BC327-25	
7600	4822 209 31378	NJM4556MB	
7601	4822 130 60511	BC847B	
7602	4822 130 42804	BC817-25	
7603	4822 130 42804	BC817-25	
7604	4822 130 42804	BC817-25	
7605	4822 130 60511	BC847B	
7606	4822 130 60511	BC847B	
7607	4822 130 60373	BC857B	
7608	4822 130 42804	BC817-25	
7609	4822 130 60373	BC857B	

Note: Only the parts mentioned in this list are normal service spare parts.

11-14

ELECTRICAL PARTS LIST - COMBI BOARD (Non-Cenelec Tuner portion only)

ELECTRICAL PARTS LIST - COMBI BOARD (Non-Cenelec Tuner portion only)

MISCELLANEOUS

1101	2422 015 19376	Socket 2P Clickfit	/37
1102	4822 267 10283	Socket Coaxial 75R	/21/34
1103	4822 265 31184	JST Connector 2P	

CAPACITORS

2101	4822 122 33777	47pF 5% 63V	
2102	2238 586 59812	100nF +80/-20% 50V	
2103	5322 126 11578	1nF 10% 50V	
2104	4822 122 31765	100pF 2% 63V	
2105	4822 126 13838	100nF 10% 50V	/37
2106	2020 800 00191	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2120	4822 126 14507	18pF 5% 50V	
2124	4822 126 14494	22nF 10% 25V	
2125	2238 861 18561	560pF 1% 50V	
2126	4822 126 14241	330pF 1% 50V	
2127	4822 126 13879	220nF +80/-20% 16V	
2128	4822 124 40248	10µF 20% 63V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 14494	22nF 10% 25V	
2131	3198 017 44740	470nF 10V	
2132	3198 017 44740	470nF 10V	
2133	4822 124 21913	1µF 20% 63V	
2134	3198 017 31530	15nF 50V	/21/34
2134	5322 122 32654	22nF 10% 63V	/37
2135	3198 017 31530	15nF 50V	/21/34
2134	5322 122 32654	22nF 10% 63V	/37
2136	4822 126 13879	220nF +80/-20% 16V	
2137	4822 126 13879	220nF +80/-20% 16V	
2138	4822 124 22652	2,2µF 20% 50V	
2139	4822 122 33752	15pF 5% 50V	
2140	4822 126 14226	82pF 5% 50V	
2141	2238 586 59812	100nF +80/-20% 50V	
2143	4822 126 13879	220nF +80/-20% 16V	
2144	4822 124 21913	1µF 20% 63V	
2145	4822 126 13883	220pF 5% 50V	
2146	4822 126 13883	220pF 5% 50V	
2147	4822 126 13883	220pF 5% 50V	
2148	4822 126 14238	2,2nF 50V	
2149	2222 867 15339	33pF 5% 50V	/34
2150	4822 126 14585	100nF 10% 50V	
2152	4822 126 14549	33nF 16V	/21/37
2152	4822 126 14249	560pF 10% 63V	/34
2153	4822 122 33752	15pF 5% 50V	/21/37
2153	4822 126 11663	12pF 50V	/34
2155	2020 800 00191	Trimmer 3-11pF 100V	
2159	2222 867 15339	33pF 5% 50V	
2164	3198 017 44740	470nF 10V	
2165	2238 586 59812	100nF +80/-20% 50V	
2166	5322 126 11578	1nF 10% 50V	
2167	4822 126 11663	12pF 50V	
2169	4822 126 14238	2,2nF 50V	

RESISTORS

3101	4822 051 30333	33k 5% 0,062W	
3102	4822 117 13632	100k 1% 0,62W	
3103	4822 117 12902	8k2 1% 0,063W	
3104	4822 117 13577	330R 1% 0,1W	
3105	4822 051 30221	220R 5% 0,062W	
3132	4822 051 30479	47R 5% 0,062W	
3134	4822 051 30223	22k 5% 0,062W	
3141	4822 051 30563	56k 5% 0,062W	
3142	4822 100 12159	Trim-pot 100k 30%	
3143	4822 051 30223	22k 5% 0,062W	/34
3144	4822 051 30102	1k 5% 0,062W	/34
3145	4822 051 30222	2k2 5% 0,062W	
3146	4822 117 12139	22R 5% 0,062W	
3152	4822 051 30471	470R 5% 0,062W	
3153	4822 051 30471	470R 5% 0,062W	
3154	4822 051 30331	330R 5% 0,062W	
3155	4822 051 30221	220R 5% 0,062W	
3156	4822 117 13632	100k 1% 0,062W	/21
3157	4822 117 13632	100k 1% 0,062W	/34
3158	4822 051 30471	470R 5% 0,062W	
3159	4822 051 30471	470R 5% 0,062W	
3160	4822 051 30471	470R 5% 0,062W	
3161	4822 051 20223	22k 5% 0,1W	
3167	4822 051 20121	120R 5% 0,1W	
3168	4822 051 30121	120R 5% 0,062W	
3169	4822 051 30154	150k 5% 0,062W	
3170	4822 117 13632	100k 1% 0,62W	/21/37
3172	4822 051 30562	5k6 5% 0,063W	
3176	4822 051 30333	33k 5% 0,062W	/34
3181	4822 051 30102	1k 5% 0,062W	
4103	4822 051 30008	0R Jumper 0603	
4106	4822 051 20008	0R Jumper 0805	
4107	4822 051 30008	0R Jumper 0603	
4108	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5102	4822 157 71634	RF-Coil MW
5109	4822 242 70665	FM-IF Filter 10,7MHz
5110	4822 242 70665	FM-IF Filter 10,7MHz
5111	2422 549 44023	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM-IF Filter 450kHz
5119	4822 157 11443	Discriminator Coil
5121	4822 242 10261	Quartz 75kHz
5123	2422 549 44108	RF-Coil AM-Oscillator
5130	4822 157 11843	RF-Coil 1,5 Turns
5131	4822 157 11843	RF-Coil 1,5 Turns

DIODES

6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H-B
6106	9340 255 30115	BAS216
6107	9340 386 90115	BZX284-C11
6120	9340 255 30115	BAS216 /34/37
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

TRANSISTORS & INTEGRATED CIRCUITS

7101	9351 740 80557	TEA5757H/V1	
7102	4822 130 42131	BF550	
7103	5322 130 42756	BC857C	/34
7111	5322 130 42755	BC847C	
7112	4822 130 40959	BC547B	

ELECTRICAL PARTS LIST - COMBI BOARD (Cenelec Tuner portion only)

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial 75R	
1103	4822 265 31184	JST Connector 2P	
1110	2422 542 90071	FM Frontend FE450-G01	

CAPACITORS

2102	2238 586 59812	100nF +80/-20% 50V	
2106	2020 800 00191	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2120	4822 126 14507	18pF 5% 50V	
2124	5322 126 11583	10nF 10% 50V	AM/FM only
2125	2238 861 18561	560pF 1% 50V	
2127	4822 126 13879	220nF +80/-20% 16V	
2128	4822 124 40248	10µF 20% 63V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 14494	22nF 10% 25V	
2131	3198 017 44740	470nF 10V	
2132	3198 017 44740	470nF 10V	
2133	4822 124 21913	1µF 20% 63V	
2134	3198 017 31530	15nF 50V	
2135	3198 017 31530	15nF 50V	
2136	4822 126 13879	220nF +80/-20% 16V	
2137	4822 126 13879	220nF +80/-20% 16V	
2138	4822 124 22652	2,2µF 20% 50V	
2139	4822 122 33752	15pF 5% 50V	
2140	4822 126 14226	82pF 5% 50V	
2141	2238 586 59812	100nF +80/-20% 50V	
2143	4822 126 13879	220nF +80/-20% 16V	
2144	4822 124 21913	1µF 20% 63V	
2145	4822 126 13883	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 63V	
2147	4822 122 33575	220pF 5% 63V	
2148	4822 126 14238	2,2nF 50V	
2149	2222 867 15339	33pF 5% 50V	
2150	4822 126 14585	100nF 10% 50V	
2159	2222 867 15339	33pF 5% 50V	
2162	4822 124 81151	22µF 50V	
2164	3198 017 44740	470nF 10V	
2165	2238 586 59812	100nF +80/-20% 50V	
2166	5322 122 31647	1nF 10% 63V	
2167	4822 126 11663	12pF 50V	
2169	4822 126 14238	2,2nF 50V	
2180	5322 126 11583	10nF 10% 50V	
2191	4822 124 41584	100µF 20% 10V	

RESISTORS

3105	4822 051 30221	220R 5% 0,062W	
3130	4822 117 12968	820R 5% 0,62W	
3131	4822 117 12968	820R 5% 0,62W	
3132	4822 051 30479	47R 5% 0,062W	
3134	4822 051 30223	22k 5% 0,062W	
3135	4822 051 30102	1k 5% 0,062W	
3141	4822 051 30563	56k 5% 0,062W	
3142	4822 100 12159	Trimpot 100k 30%	
3143	4822 051 30223	22k 5% 0,062W	
3144	4822 051 30102	1k 5% 0,062W	
3145	4822 051 30222	2k2 5% 0,062W	
3146	4822 117 12139	22R 5% 0,062W	
3150	4822 051 30103	10k 5% 0,062W	
3151	4822 051 30683	68k 5% 0,062W	
3152	4822 051 30471	470R 5% 0,062W	
3153	4822 051 30471	470R 5% 0,062W	
3154	4822 051 30331	330R 5% 0,062W	
3155	4822 051 30151	150R 5% 0,062W	
3156	4822 117 13632	100k 1% 0,62W	
3157	4822 117 13632	100k 1% 0,62W	
3158	4822 051 30471	470R 5% 0,062W	
3159	4822 051 30471	470R 5% 0,062W	
3160	4822 051 30471	470R 5% 0,062W	
3161	4822 051 30223	22k 5% 0,062W	
3167	4822 051 20121	120R 5% 0,1W	
3168	4822 051 30121	120R 5% 0,062W	
3169	4822 051 30154	150k 5% 0,062W	
3171	4822 117 12925	47k 1% 0,063W	
3172	4822 051 30562	5k6 5% 0,063W	
3176	4822 051 30333	33k 5% 0,062W	
3190	4822 051 30121	120R 5% 0,062W	
3191	4822 051 30121	120R 5% 0,062W	
3192	4822 051 30331	330R 5% 0,062W	
3193	4822 051 30331	330R 5% 0,062W	
3194	4822 051 30222	2k2 5% 0,062W	
3195	4822 051 30101	100R 5% 0,062W	
4101	4822 051 30008	0R Jumper 0603	AM/FM only
4102	4822 051 30008	0R Jumper 0603	AM/FM only
4104	4822 051 30008	0R Jumper 0603	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 30008	0R Jumper 0603	
4107	4822 051 20008	0R Jumper 0805	

COILS & FILTERS

5102	4822 157 71634	RF-Coil MW
5109	4822 157 71639	FM-IF Filter 10,7MHz
5110	4822 242 70665	FM-IF Filter 10,7MHz
5111	2422 549 44023	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM-IF Filter 450kHz
5115	4822 157 71636	Birdie Coil
5118	2422 535 95881	Coil 0,1µH 5%
5119	4822 157 11443	Discriminator Coil
5121	4822 242 10261	Quartz 75kHz
5123	2422 549 44108	RF-Coil AM-Oscillator

DIODES

6105	4822 130 83075	HN1V02H-B
6106	9340 255 30115	BAS216

ELECTRICAL PARTS LIST - COMBI BOARD (Cenelec Tuner portion only)

DIODES

6107	9340 386 90115	BZX284-C11

TRANSISTORS & INTEGRATED CIRCUITS

7101	9351 772 20557	TEA5762H/V1
7103	5322 130 42756	BC857C
7110	4822 130 60373	BC857B
7111	5322 130 42755	BC847C
7112	4822 130 44503	BC547C

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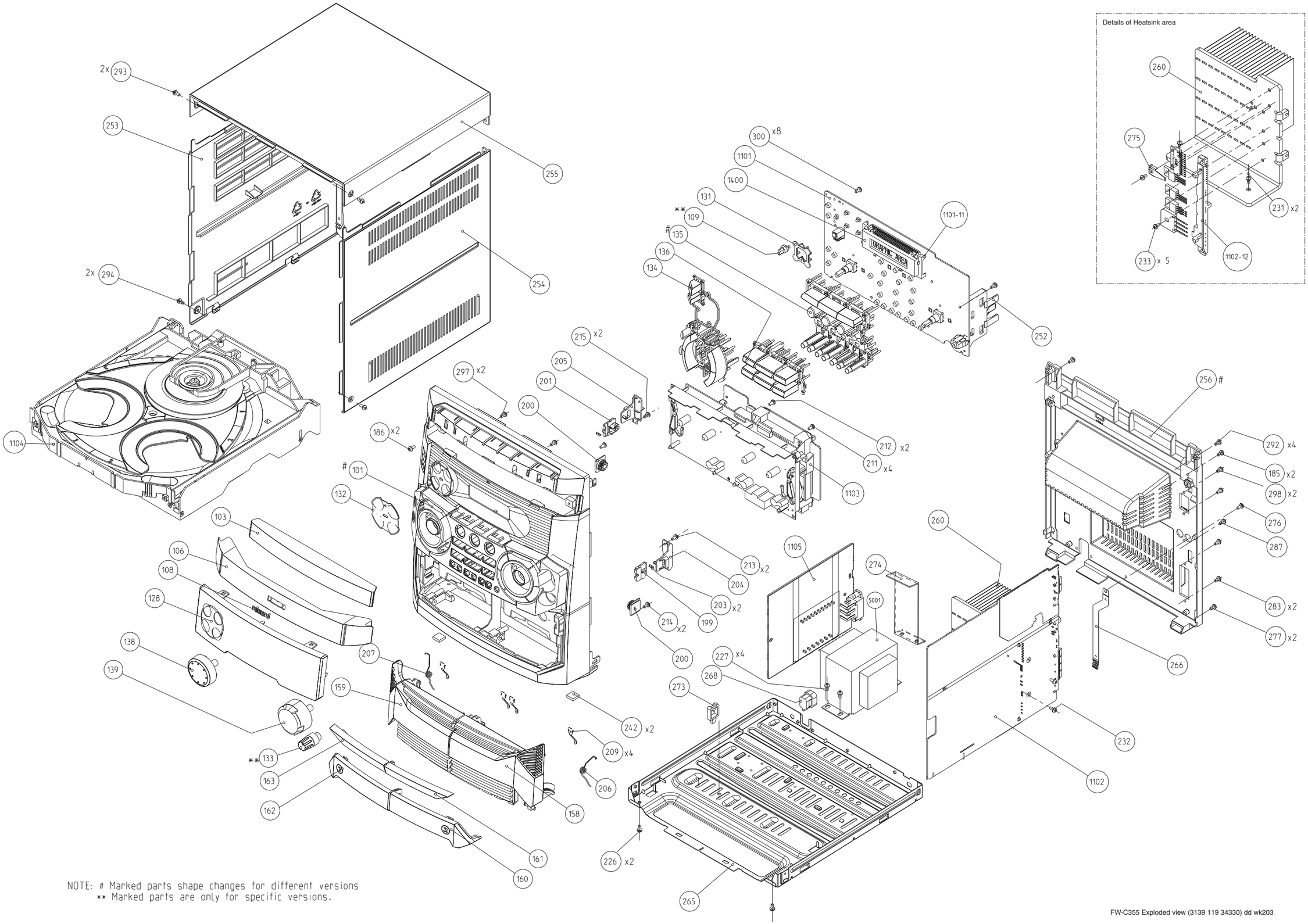
EXPLODED VIEW - MAIN UNIT



NOTE: # Marked parts shape changes for different versions
** Marked parts are only for specific versions.

FW-C355 Exploded view (3139 119 34330) dd wk203

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	3139 118 17211	Cabinet Front	/21
101	3139 118 16860	Cabinet Front	/22
101	3139 118 17300	Cabinet Front	/34
103	3139 118 16961	Cover CDC Panel	
106	3139 118 16871	Cover Tray CDC	
108	4822 454 13408	Badge Philips	
128	3139 118 17220	Window Display	/21
128	3139 118 16880	Window Display	/22
128	3139 118 17290	Window Display	34
133	3139 118 16390	Knob Karaoke	/21
134	3139 118 16890	Button Set Power	
135	3139 118 17230	Button Set Source	/21
135	3139 118 16900	Button Set Source	/22/34
136	3139 118 16910	Button Set Control	
138	3139 118 16350	Knob Jog Rotary	
139	3139 118 16360	Knob Volume Rotary	
158	3139 118 16940	Cover Cassette Right	
159	3139 118 16950	Cover Cassette Left	
160	3139 114 74280	Lens Cassette Right	
161	3139 114 74570	Lens Cassette Right Top	
162	3139 114 74290	Lens Cassette Left	
163	3139 114 74560	Lens Cassette Left Top	
199	4822 402 10621	Push-Catch	
200	4822 529 10322	Damper Assembly	
201	3139 114 68640	Push Catch Left	
203	4822 492 11344	Spring Compression	
204	4822 402 11246	Bracket Right	
205	4822 402 11245	Bracket Left	
206	3139 111 01380	Spring Torsion Right	
207	3139 111 01390	Spring Torsion Left	
209	4822 492 70231	Spring Leaf	
242	4822 462 40683	Foot Rubber SQ	
268	3139 114 74620	Grommet, Mains Cord	
275	4822 492 11735	Spring Trans	
350	3139 118 79050	LS Box Package	
	9965 000 11640	Left LS Box	
	9965 000 11641	Right LS Box	
351	4822 303 50063	FM Aerial	
356	3139 118 79300	Remote Control FW-C255	
384	2422 549 45067	AM Antenna Loop	
385	2422 070 98145	Mains Cord 1,6M	
386	4822 263 21092	Adapter Plug	/21
387	3139 115 21381	Instruction For Use	/21
387	3139 115 21341	Instruction For Use	/22
387	3139 115 21391	Instruction For Use	/34
1400	3139 110 35940	Flex Cable 30pin 18cm AD	/21/34
1400	3139 110 35930	Flex Cable 32pin 18cm AD	/22
1402	4822 320 12703	Flex Cable 7pin 14cm BD	
1500	3139 110 35920	Flex Cable 4pin 14cm AD	/21
1700	4822 320 12654	Flex Cable 7pin 22cm AD	
1800	3139 110 35880	Flex Cable 15pin 18cm BD	
5001	3139 118 32490	Mains Transformer	/21
5001	3139 118 32481	Mains Transformer	/22/34

Note: Only the parts mentioned in this list are normal service spare parts.

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SCREW LISTS - MAIN UNIT

185	D3 x 12
186	D3 x 12
211	D3 x 12
212	D3 x 12
213	D3 x 12
214	D3 x 12
215	D3 x 12
226	M3 x 6
227	M3 x 6
231	M3 x 10
232	M3 x 10
233	M3 x 10
276	M3 x 6
277	M3 x 10
283	D3 x 12
287	D3 x 12
292	D3 x 12
293	D3 x 12
294	D3 x 10
297	D3 x 12
298	D3 x 12
300	D3 x 12